# City in a Fluidity Landscape
## Rethinking the Urban Lao Village on the Mighty Mekong

Siphathay Pouy Phanphengdy
May 2010

*Submitted towards the fulfillment of the requirements for the Doctor of Architecture Degree.*

School of Architecture
University of Hawai‘i

**Doctorate Project Committee**
Kazi Ashraf, Chairperson
Spencer Leineweber
Leonard Andaya

# City in a Fluidity Landscape
## Rethinking the Urban Lao Village on the Mighty Mekong

Siphathay Pouy Phanphengdy
May 2010

---

*We certify that we have read this Doctorate Project and that, in our opinion, it is satisfactory in scope and quality in fulfillment as a Doctorate Project for the degree of Doctor of Architecture in the School of Architecture, University of Hawai'i at Mānoa.*

Doctorate Project Committee

Professor Kazi Ashraf, Chairperson

Professor Spencer Leineweber

Professor Leonard Andaya

**Acknowledgement**

Many people generously set aside time to discuss and help me clarify many points of the thesis. I wish to acknowledge everyone in the committee for all of their help and support: Professor Kazi Ashraf and Professor Spencer Leineweber from the School of Architecture in University of Hawai‘i at Manoa, Professor Leonard Andaya from the History Department in University of Hawai‘i at Manoa. I would also like to thank Mr. Jason Pomeroy from Broadway Malyan in Singapore, and Mr. Phonxay Southiphong from Design Group in Vientiane of Laos. All of them have helped in various ways, especially through discussions and the sharing of information. I would like to give a special thanks to Professor Kazi Ashraf for introducing me to the thesis topic and working with me through the whole journey. I have never thought to do a design thesis, but by doing so, it helped me understand a lot about planning and important key issues in the Mekong delta of Vientiane. I would also like to acknowledge the University of Hawaii at Manoa, the School of Architecture, the University of Hawai‘i at Manoa libraries (Sinclair and Hamilton libraries), and the National Library of Singapore for providing useful textbooks and journals. Finally, thank you for the support and motivations from all of my parents, my family and friends.

## Abstract

The thesis focuses on the development of a new urban village in a vulnerable landscape on the Mekong delta in Laos. This design thesis begins with a site, located in the lowland just away from the border between Laos and Thailand along the mighty Mekong River that floods unpredictably in the national capital of Vientiane, also known as Viang Chan. The site is called Don Chan, which sits on the riverbank of Laos overlooking the river and Thailand border (*see figure 0.1*). The design thesis sheds light on the vision of creating a sustainable future for the floodplains of Don Chan for the social housing development. It will explore what it means to be at the forefront of urban regeneration and act as the catalyst for new sustainable communities.

Furthermore, the thesis will also examine and explore the concept of "*Baan*" or Lao village. It will investigate the existing village pattern, arrangement, and organization. The research includes not only the studies of the physical grouping but also the social grouping pattern and building types. Moreover, the thesis will explore the current issues of the overall site in terms of the climatic and geological pattern such as flood-prone areas, flow of water, water pattern, seasonal change, relationship to the landscape, relationship to the existing village, and adaptations near the river. In addition, the thesis also analyzes the city of Vientiane, its urban layout, city pattern, and movements. It includes the analysis of the existing village on the Mekong delta and its relationship to the water, site and city. The design strategy and case study of this new urban development plan will accommodate the entire site of Don Chan. The findings then are laid out in the basis of exploration for a new way in tackling the social housing master plan development in the Mekong delta of Vientiane.

The objective of this thesis is to define some of the key issues in developing the area of Don Chan, and then to develop a conceptual design to demonstrate an alternative development as an option to accommodate the site. The goal is to contribute in developing new ideas of a healthy development along the Mekong basin in Vientiane within the context of architecture and urban planning that are socially, economically, and environmentally responsive to the Laotian communities. Its guidance will be relevant to all aspects of the built environment that includes building designs, spaces, landscapes and systems. To some, history and tradition are often considered non-contemporary design concepts. Although modernity is very contemporary,

modernity and tradition are not always contradictory. The two concepts can interact with one another harmoniously and beneficially. The result will be the first sustainable development in Vientiane established through the adaptability of local traditional ways, using modern ideas by way of today's technology, and new methodologies.


**Figure 0.1**: Proposed Site of Don Chan, Vientiane, Laos. *Source*: Data from "Google Earth 2009."

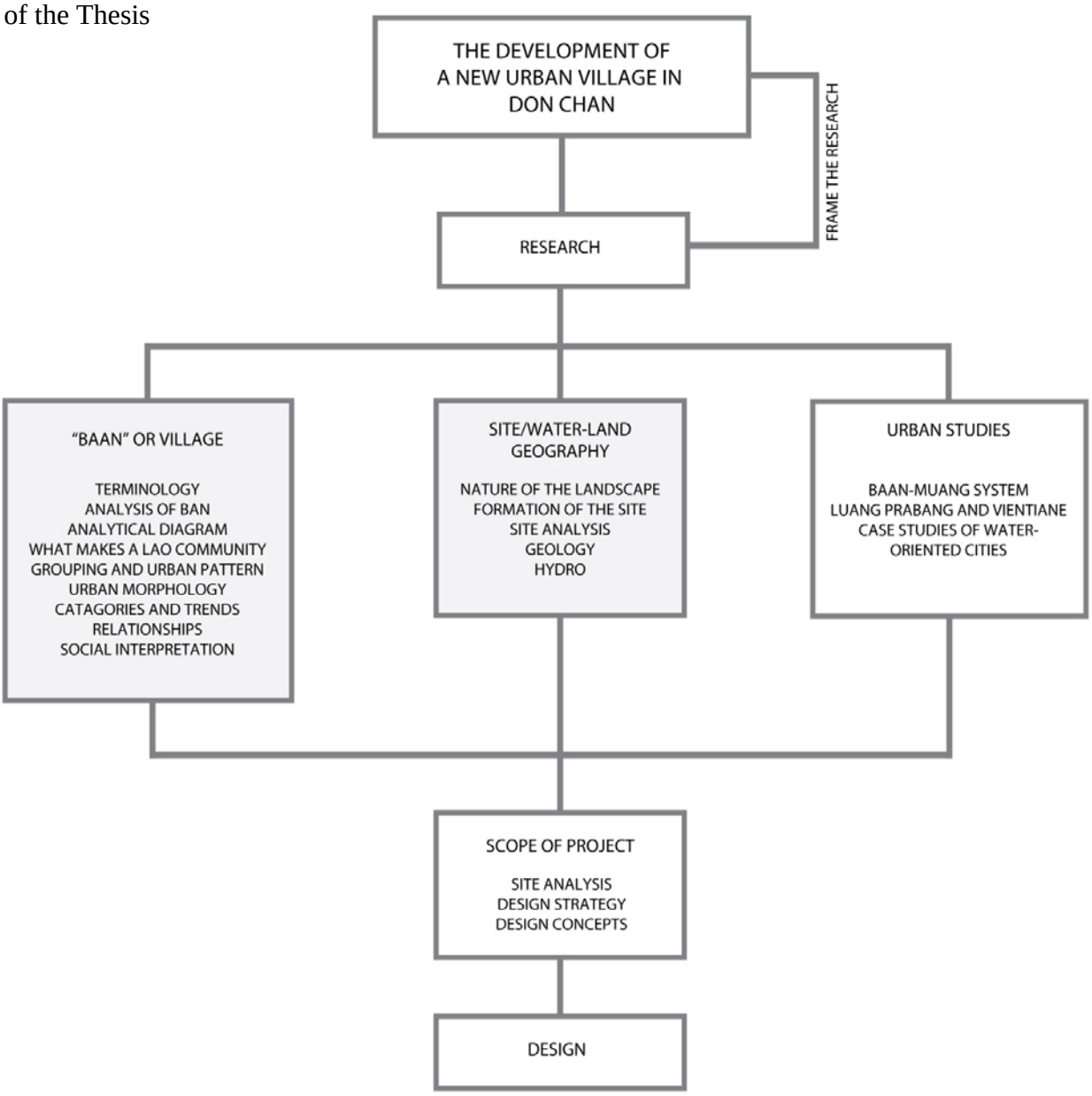
## Methodology

The research and design methodology chosen in the thesis begins with a comprehensive research on the concept of *baan*, and the concept of water-land geography by using interpretive-historical, correlational and logical argumentation. The main content will be in the narrative form rather than numerical or cause and effect structure from both historical focus and contemporary context. The research required data collecting from different types of sources in English and Laotian. Analysis of case studies in the historical and qualitative framework from both local and international sources is included in the methodology.

The research is broken down into two components: the studies of the *baan* concept, and water-land geography concept. Other references include site analysis and urban studies. In the context of *baan* or Lao village, the research focuses on analyzing the terminology in terms of what really makes a Lao community and its grouping pattern, urban morphology, relationship to the city, relationship to land and water, and its social interpretation. On the opposing side of the research, the thesis explores the concept of water-land site geography. It examines the nature landscape, the formation of the site, its geology and hydrological structure, and its relationship to the Lao societies. Along with the comprehensive research of both of these concepts, the thesis further investigates the urban study of Vientiane city and two case studies of water-oriented cities including Ayudhya of Thailand, and Venice in Italy.

With all the collected information from this comprehensive research, the design strategy then develops conceptual ideas drawn from the studies and integrates them with the exploration of site analysis and other design concepts. These other design concepts refers to defining the character of the project itself in the terms of good adaptability, diversity, legibility, ease of movement, continuity and enclosure, and quality of the public realm. The criteria and design attitude then focuses within the context of architecture and urban planning that are socially, economically, and environmentally responsive to the site and the Laotian communities.

**Figure 0.2:** Breakdown of the Thesis



## Table of Contents

## List of Figures

## Preface

The Mekong River is one of the major and most important rivers in Southeast Asia. It serves as the main water source for all Southeast Asian mainland nations including China. The river flows down from the Tibetan Plateau to China, Burma, Thailand, Laos, Cambodia and Vietnam. The water level of the river rises during the wet season, which sometimes results disastrous flooding in many areas. In the city of Vientiane in Laos for example, flooding is a natural event that occurs every year, particularly along the Mekong shore.

The whole portion of Don Chan is an island that becomes floodplains during the dry season where the level of Mekong River recedes, and then it turns into wetlands in the rainy season when the river level rises. During the dry season, the plains are agricultural landscapes and fishing areas for the Lao communities. However, due to climate change and with numerous dam constructions up in China today, the level of the water is unpredictable. I remember growing up in Vientiane, where I lived right next to the site of Don Chan; I used to go shore fishing with my father along the river. I would see the whole plain as an agricultural landscape during the dry season. In the wet season on the other hand, I would see people fishing off the shore and paddling in their canoes. I also remember seeing the water rise and flood the agricultural plains. I remember the water flowing aggressively carrying a tremendous amount of debris, scraps and silt downstream.

The whole site of Don Chan is the Lao government's property, so any development or urban planning has to be negotiated directly with the highest level of the government party. In the past, the Lao government constructed embankments and filled many areas of Don Chan to lift up the city elevation for urban development and to prevent flooding. The redevelopment of the waterfront included large extensions of landscape, construction of parking lots and extensive earthworks to alter and adjust the riverbank itself. As a result, Don Chan is now an inhabitable area of the site along with other uninhabitable areas such as Haat Don Chan, which is a dune of floodplains during the dry season and becomes part of the river during the rainy season *(see figure 0.3).*

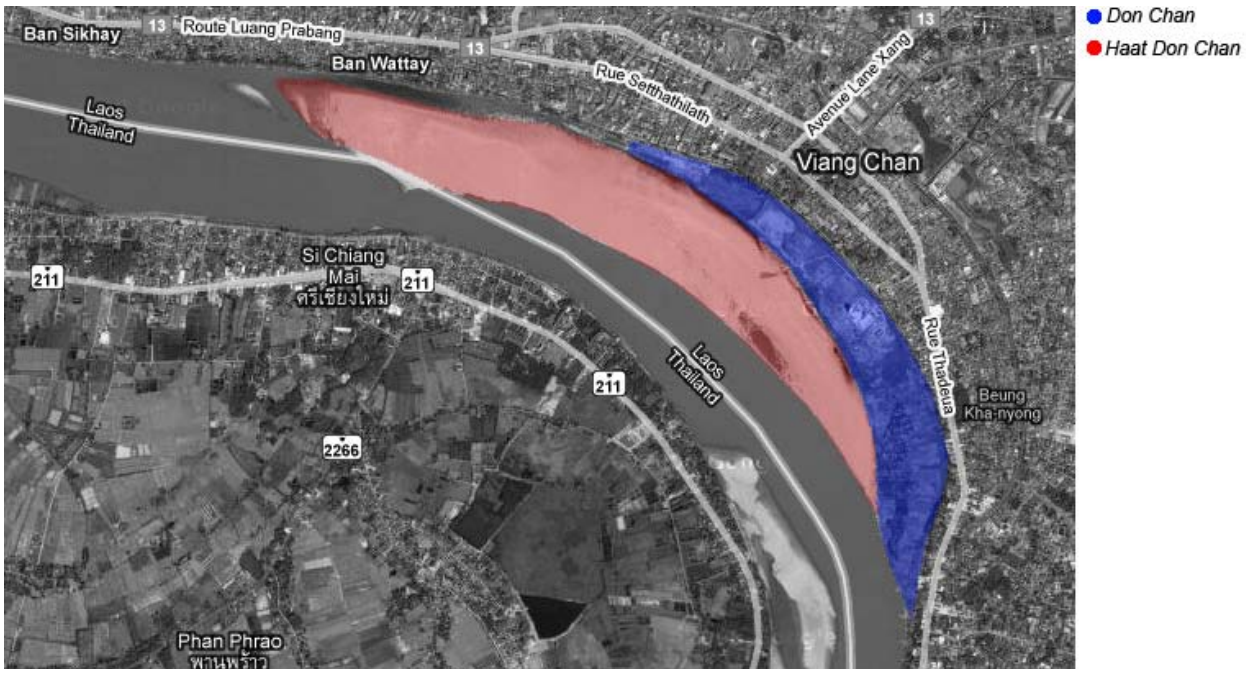



**Figure 0.3**: Site of Don Chan, *Source*: Data from "Google Earth 2009."

An increasing amount of insensitive developments and dirt filling on the wetlands closer and closer to the river contributes to this landscape. As I have visited Laos once a year for the last twelve years, I have seen many universally constructed buildings systematically replace local landscape and housing in Vientiane. Although Don Chan is the Lao government's responsibility for development, it is also the developers, designers and the public's responsibility to influence the development into a socially, economically, and environmentally responsive area. The site of Don Chan has a lot of potential and opportunities. The planning of Don Chan began to make me question the way we build. What would be the appropriate way to plan and build in this area, in a way that would begin to speak to the beauty and uniqueness of this place? It is understandable that the Lao government and business communities want to become accustomed to living in this modern world of the 21st century. This thesis finds a way to develop the area in a way that responds to the existing rich culture, its unique geology and geography to become more socially, economically, and environmentally responsive.

## Part I:  Research and Analysis

## Chapter 1: Introduction

**Figure 1.0**: The Floodplain of Don Chan along the Mekong River in the main city of Vientiane.
*Source*: "http://max-walsh.com/wp-content/upLoads/mekong-flood-plain_from-don-chan2-1024x504.jpg"

Lao saying, "*When the water level falls, the ants eat the fish; when the water level rises, the fish eat the ants…*"

**Heywood 2006, 11.**

***Laos in Transition***

Southeast Asia has undergone dramatic change with rapid development towards urbanization and modernization. The changes such as industrial capitalism, cultural change, consumer culture, urban culture in social and political structure are among the transformation of the social, economical, political, traditional and cultural aspects. Even though Southeast Asia is increasingly shifting towards becoming modern, the people there never ignored their own history and culture. However, not all Southeast Asian nations are transforming at the same pace due to their differences in economy, history, political and geographical position.

Laos in many ways is less exposed to the forces of globalization than others in the Southeast Asia region. But it is exposed to external ideas and concepts in many ways, particularly in the context of urbanization and modernization, predominantly in today's city capital of Vientiane. As the Lao government become attracted to foreign investments, many Asian investors have targeted Laos and the city of Vientiane as a profitable opportunity. As a result, development and construction are beginning to become part of the city's landscape as it moves towards expansion.

One of the many development sites within Vientiane city is the site of Don Chan, which Collin Long, one of the authors of "Vientiane: Transformations of a Lao Landscape" argues that Don Chan is one of the best recession floodplains in Southeast Asia.[1] This unique floodplain along the Mekong delta near the border of Thailand was and still is the ideal location for the Lao lifestyle in which the river serves as its sole lifeline. The Mekong River and its associated wetlands and floodplains are important for the Lao people and their way of life. It provides food and income from agricultural production, fisheries, forestry products and hydro power plants. The river also serves as an important means of transportation networks in moving goods and services throughout the Mekong region connecting the region to the outside world. Economic activities are not the only basis the river serves. It is also linked with the Lao cultures and history of the Mekong basin people. The Mekong River has a significant impact on the way of life of the Lao people living near the floodplains and the river.

[1] Askew 2007, 181.

The Lao people also influence the river in terms of the physical and biological system. Human activities such as fisheries, forestry, transportation, dams and agriculture productions have a direct impact on the Mekong River system. It changes the river's form and functions, the quality of water, the ecology and biodiversity. With urbanization throughout the city today, the high population density contributes to the change of lifestyle along the Mekong, which puts more pressure on the floodplains for development of mega projects. The density causes degradation of natural environments, traffic congestion and flooding problems, which lead to pollution and over consumption of energy.

With the new economic mechanism program, the Lao government took the opportunity to landfill parts of the site by establishing embankments for economic expansion and urban development. Currently, a five-star international hotel owned by Malaysian called Don Chan Palace Hotel occupies the site, which has become the meeting place for Southeast Asia's major multi-national organizations.[2] Along with this landmark structure, there are some clusters of residential homes and agricultural land that the Lao government gave permission to the public to use and occupy contemporarily.

As part of the Integrated Resort Industry, with the help from international organizations, the Lao government further plans to develop the whole site of Don Chan into the largest mixed-use commercial attraction in Laos according to the New Five Elements (*see figure 1.1*).[3] The plans include the integration of a large casino function in the existing Don Chan Palace Hotel, the largest shopping center in Laos, and a residential project called Don Chan Garden, which aims for expatriate businesspersons and the higher income working class. It will comprise of 96 housing units in four different types of high-end Greco-Roman styles on 8.48 hectares leasehold from the Lao government.[4] Logically, one would question the current planning of Don Chan with respect to the natural impact that the Mekong River has on the site and if the planning has considered the social, economical and environmental aspects.

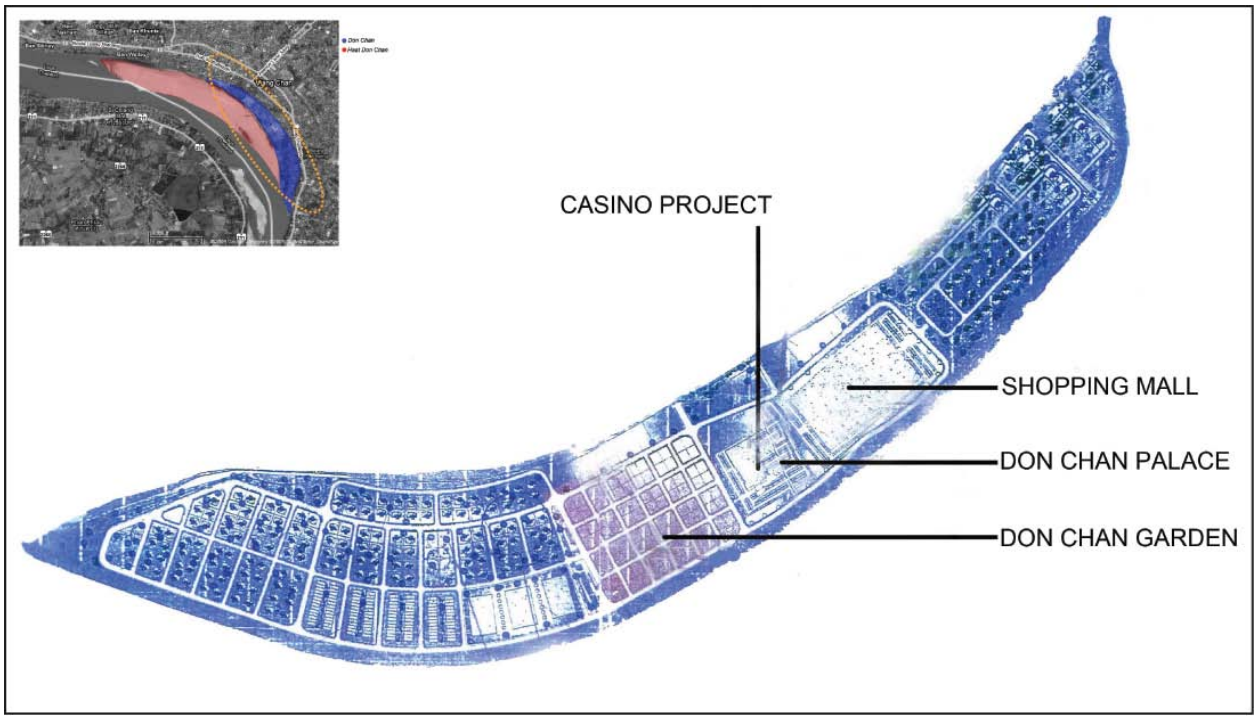
---

[2] *Don Chan* Palace hosted the 10th ASEAN (Associations of the Southeast Asian Nations) Summit in 2004 and the ASEAN Ministrial Meeting in 2005, by Askew 2007, 182.

[3] New Five Elements Sdn. Bhd. http://www.sunlaoscity.com/Home.htm (accessed September 8, 2009).

[4] Ibid., http://www.sunlaoscity.com/Home.htm (Accessed September 8, 2009).

**Figure 1.1**: Developing plan on the site of Don Chan. *Source*: "New Five Elements Sdn. Bhd." http://www.sunlaoscity.com/Company%20Plans.htm *(accessed September 8, 2009)*




With any developments and project proposals, it is vital that they are designed with the regards of the environmental, social and economical costs. There are many examples of projects in the Vientiane prefecture that have gone without taking these considerations. One of them is the Singaporean-constructed shopping center next to the famously existing Lao Morning Market. Colin Long argued that it was constructed with little thought for the social, economical and environmental costs.[5] Another construction is the famous landmark of the first international five-star hotel of Don Chan Palace on the environmentally sensitive banks of the Mekong River *(figure 1.2)*. The project was negotiated at the highest level with the Lao government without its own urban planning, environmental and cultural protection agencies. Long further argued that the development is "symbolic of the vulnerability of the river to damage done in the name of obtaining foreign investment…it is the most intrusive and destructive project in Vientiane."[6] It

[5] Askew 2007, 181.
[6] Ibid. 2007, 181.

was promoted as a source for jobs and was the notion of economic growth. However, it is still questionable if it provided a healthy living of social, economical, and environmental livelihood to the Lao community. Filling up the floodplains for economical purposes without realizing the social and environmental impact is irresponsible.

**Figure 1.2**: The first international five-star hotel of Don Chan Palace in Vientiane city
*Source*: http://www.visit-mekong.com/don-chan-palace/images/hotel00.jpg

The hotel may have become an important landmark of economic growth, but how the new development plan for the rest of Don Chan will benefit the community and how it is responding to the site in the context of water-land geography is uncertain. It is essential that the planning involves the public and allows them to help make decisions. Understand, respect and reflect the existing site, its culture, traditions and the daily lifestyle that revolves around the Mekong River. Although the planning aims towards high-income working class and expatriate businesspersons, it needs to consider the involvement with the local communities and promote social quality that reflects values and social identities. What helps to reduce disputation and conserve resources is the principle of a thoughtful community and better urban design that responds to the vulnerable landscape of the Mekong floodplains.

This urban design proposal for the new urban village does not aim to set out a new policy, but rather a planning guidance that intends to stimulate and help enhance the livelihood and the site of Don Chan. However, it cannot claim to be the one and only best way to approach the challenge. On the other hand, one may consider one of the solutions in tackling this challenge is responding to the floodplains. It aims to reinforce the relationship between the city and its rivers and help reclaim access to its waterfronts. Furthermore, it approaches the study by emphasizing a number of key concepts such as the concept of *baan* and the principle of water-land geography. The concept of *baan* or Lao village is unique to the Lao communities, and is used in both rural and urban contexts. It provides a deep and comprehensive way of understanding the characteristics of Lao spatial arrangements in responding to the river. With regards to the urban village and landscape, it involves the morphology of Vientiane city areas along the Mekong River. It also highlights the dynamic relationship and interaction between the built and the natural environment. The recent analysis of *baan* conducted by a Lao student in 1996-1997 is noteworthy and will further be enhanced with examination that is more recent. Since there has been no other comprehensive study that enhances the work, it is arguable that it cannot be complete without investigating the *baan* organization in the present day of Vientiane city.

Understanding the general site of water-land geography concept helps specify the current situation of how to build and plan on that particular landscape. The site analysis of the geological framework determines the site formation and the hydro pattern. This offers a contribution to discussions about the construction and organizational pattern of the floodplain basin along the Mekong delta in Vientiane city. Responding to the site is important. The early settlements of Lao communities along the river have become adapted to the existing environment. Their daily lifestyle revolves around the river. As a result, they understood the geological aspects of the river and the landscape.

## Chapter 2: General Site of Water-Land Geography

**Figure 2.0**: Life in motion on the Mekong River in Laos.
*Source*: "http://www.flickr.com/photos/-lucie-/3150597494/"

*"A beautiful soul is better than a beautiful form…" by Henri Marchal*

**Heywood 2006, 29.**

Water from the Mekong and its water-land geography is important in all aspects of life for the Lao people. It serves as a means of communication, transportation, fishing, aquaculture and agriculture, and all daily domestic uses such as drinking, cooking and bathing. As a result, in order to integrate a design on this vulnerable landscape of Don Chan, it is necessary to understand the concept of water and water-land geography. This chapter describes the concept of water-land geography, which examines the Lao concept of water, relationships between the Lao people with land and water, the concept of wetlands and floodplains, and the current situation of the Mekong River deltas.

***The Lao Concept of Water***

The concept of water has been recognized as an important element in many cultures around the world, especially in the Southeast Asia region. In fact, the origins of many Southeast Asian cultures and civilizations were based on the influence of water. The first Lao kingdom of *Lan Xang* was established along the rich fertile land beside the Mekong delta in today's city of Luang Prabang. Residing near the flowing water of the murky Mekong was considered an essential component of urban design. It provides nutrition, mobility and protection. In the past, the city was one of the most prosperous cities in the mainland of Southeast Asia for its large agriculture and many kinds of products from the river and inland forests. Irrigation systems and water networks were built to facilitate agriculture and transportation. The daily lives involving agriculture and rice production have always been revolved around a body of water, which is very common in Laos and other Southeast Asian countries. The Mekong is the only source of water and food for many Lao people. The Mekong River often floods during the rainy season due to the monsoon and the water recedes during the dry season. Seasonal floods maintain the water table of the floodplain carrying sediments and nutrients onto the areas. As a result, the Lao people took advantage of the seasonal floods to fisheries, agricultural productions and agro-forestry.

Due to their location along the Mekong, Lao cities became influence by foreign traders in the region. The river and its floodplains have always been the main artery of travel and trade for the Lao people. The gift of water became not only an important source for survival, but also became a bridge or a highway rather than a barrier linking distant communities.[7] For instance, the influences of the *Lan Xang* Kingdom has widely been distributed all over Laos and the mainland of Southeast Asian kingdoms including the Kingdom of Siam in Thailand, and other civilizations in Burma and Cambodia. Mekong transportation played a significant role in the linkage of similar cultures over large distances. The river and water network systems throughout the region have further helped facilitate cultivation, agricultural production and transportation.

[7] Rigg 1992, 1.

Furthermore, Lao and other Southeast Asian cultures have always been directly engaged or indirectly linked to water. It links directly and indirectly in terms of agriculture, art and architecture. For Lao people, the association of water and agriculture is not only in the physical sense but in the spiritual sense as well. This idea is realized by Jumsai, the author of "Naga: Cultural Origins in Siam and the West Pacific". He said that the most remarkable cultural common elements in the Southeast Asia region are rice agriculture, dwellings built on stilts and the use of the cosmological theme of naga.[8] Like many parts of Southeast Asia, traditional Lao dwellings respond directly to its existing environment that are mainly wooden structures built on stilts that are grouped around ruins of Buddhist temples. Its high-pitched gable roofs with extended sloped eves responds to the monsoon rain runoffs. It is built on stilts not only to maximize natural ventilation but also provides the protection from harmful animals, insect infestations, and most importantly, responding to floods during the rainy season along the Mekong floodplains. The influence of naga and its association with water also play an important role in the local architecture of religious structures. The motif of naga for instance, it is an important key motif in Buddhist temples all over the Southeast Asia region. In Laos and many parts of Thailand, they usually appear on staircases and gable ends of the congregation halls in Buddhist temples.

The concept of water and its spiritual sense in Lao culture also play an important rolei n the Lao national holidays and festivals. The rituals and songs of the rocket festival known as *bun bang fai* in Laos and the northeastern parts of Thailand for instance. It is associated and designed to ensure the prompt arrival of the monsoon rains for cultivation and agricultural purposes.[9] It is a common practice among the Lao communities to fire rockets in the sky in order to please the gods to provide rain for the upcoming agricultural and rice-growing season. These rainmaking festivals are usually held just before the rainy season. Another important festival that involves the notion of water is Lao New Year also known as *Pii Mai Lao* or *Songkran* in Thailand. It is a water festival ritual connected with rain propitiation that usually lasts about fifteen days in which everyone including the monks, Buddhist statues, the young and the old are carefully bathed. According to Jumsai, the soaking water imitates the king of *naga*

[8] Ibid., 9.
[9] Rigg 1992, 1.

playing in his element and symbolizes the gift of good rainfall throughout the year.[10] As a result, the role of water and its concept plays a significant role in the life of the Lao communities.

**Figure 2.1**: *Bun Bang Fai* in Laos.
*Source:* *http://exploremekong.org/responsible/wp-content/uploads/2009/03/laos_page_06_image_0002.jpg*

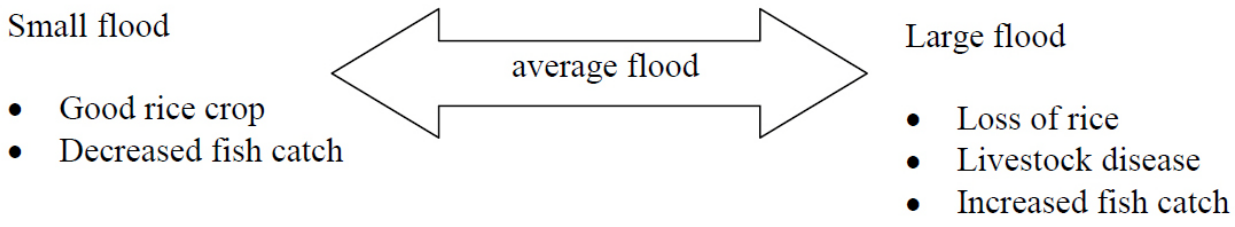
**Figure 2.2**: Laos New Year. *Source:* *http://cache4.asset-cache.net/xc/80680692.jpg?v=1&c=IWSAsset&k=2&d=17A4AD9FDB9CF193CE41B024AE96D64D2692A958C63430C1B01E70F2B3269972*

[10] Jumsai 1998, 39-40.

Water is not only a gift to be celebrated in ceremonies, art and architecture, but it can also be very destructive.[11] The result of flooding can become disastrous and deadly. In Laos, they can cause physical damage to crops and food supplies along the Mekong River while contaminating the water quality and spreading waterborne diseases to the communities. However, the Lao people recognize that. They know that large floods can physically damage infrastructure, lead to loss of agriculture and livestock diseases, and interrupt transportation networks. They also understand that large floods can result in high productivity in fisheries but loss of crops, and increase of agricultural production and decrease in fisheries during small floods *(figure 2.3)*. Consequently, the Lao people, like many cultures in Southeast Asia, have adapted to live with the flood and the existing environment. They have become aware of the role in the hydrologic cycle of the Mekong and its capabilities in productivity as well as destructivity.

The Mekong River for instance, it has always been the main natural resource for all Lao communities. It means transportation, water for drinking, washing, irrigation, disposal bin, playground, agriculture and food. The Laotians are very intelligent in their use of the Mekong. In the dry season when the riverbanks revealed the lower levels of the waters, the Laotians turned the area into fertile pieces of agricultural terraces. More interestingly, the lower the banks, the younger the vegetation. In the lowest part of the slope, one could see holes of planted seeds. However, these terraces only last for few months, come the rainy season and they will be wiped out by the rising Mekong. That is why people work the lands, carrying water up from the river to irrigate their newly planted vegetables and fruits in the higher grounds.

**Figure 2.3**: Lao perception of seasonal floods. *Source:* Mollot 2005, 160.




[11] Rigg 1992, 1-3.

***Understanding the Water-land Geography in the Lao Context***

Laos is blessed with rich aquatic resources from streams, lakes and rivers. The great river of Mekong and its tributaries have become the main natural water resource that the people of Laos depend upon. Within the river, the diversity of animals and plants found in wetlands and floodplains are essential for the Lao people in many ways. The value of wetlands is not only important to the natural ecosystems and biodiversity in that it provides food and water for the Lao communities, but it also provides environmental shelters and functions that safeguard the environment and their livelihood. A wetland refers to a transitional space that is between land and water, which are often shallow areas of the water. It is described as an area that has the presence of water, either seasonally or permanently, with unique waterlogged soils that support a wide range of vegetation and living organisms that is specifically adapted to wet conditions and lack flood intolerant vegetation (*see figure 2.5*).[12] According to Finlayson, the accepted international meaning of a wetland established by the International Ramsat Convention is "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, backfish or salt, including areas of marine water the depth of which at low tide does not exceed six meters".[13]

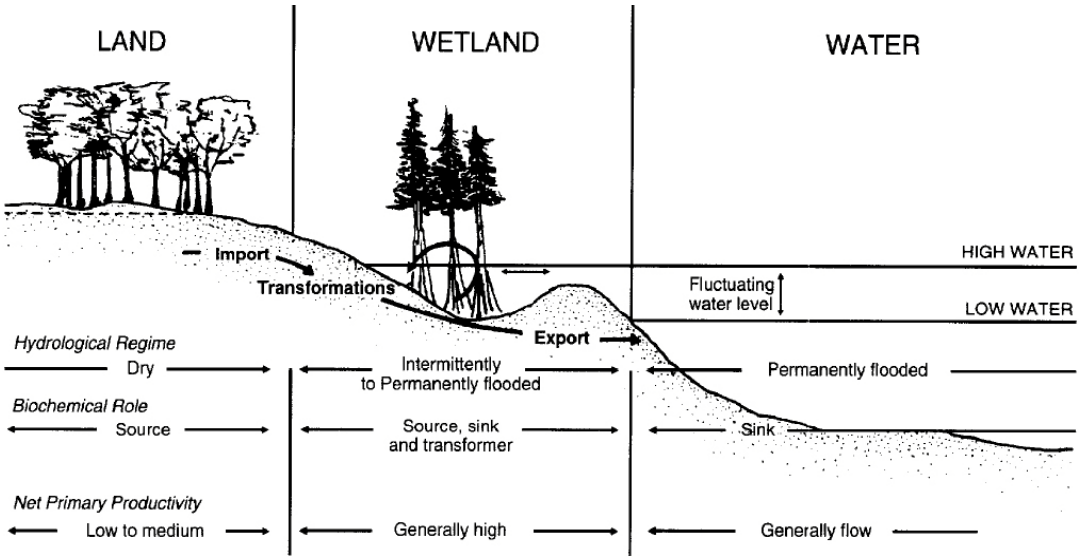



**Figure 2.4**: Wetland and Floodplain Diagram.
*Source*: "Coughanowr 1998, 3."

[12] Ibid., 3.
[13] Finlayson 2002, 18.

While wetland refers to the transitional space between water and land, floodplains on the other hand refer to the land areas or a strip of land that borders a stream channel, which are adjacent immediately to rivers and streams that are subject to recurring inundation.[14] They often become flooded periodically due to seasonal precipitation and melting of snow from the mountains. Wetlands and floodplains are interconnected and sometimes interchangeable, where floodplains become part of a wetland during the flood. The combination of these make what the Lao communities refer as water-land geography. The characteristics of the ecosystems and biodiversity such as vegetation types, hydraulic conditions, plant and animal species in this water-land geography are different from region to region due to its geographical position and conditions. For instance, the giant catfish known as the "Mekong Giant" is one of the world's largest freshwater fish and only inhabits the Mekong due to the geographical position and conditions. The geographic water-land is the most important water resource that provides not only a source of protein from animals and fisheries, but also rich soils suitable for agriculture and rice production that gave rise to the establishment of Lao villages known as *baan*.

The general idea of a floodplain centers on the events of recurring floods in which water overflows the lowland at a time of high water. In Laos, flooding usually occurs in the season of highest precipitation, which is influenced by the tropical monsoon during the months of May to late October and November.[15] However, every so often, flooding can also be due to human activities such as altered hydrology, dam construction, and the development of infrastructure that reflects to demands of rapidly a growing population, urbanization, and land reclamation. For example, the construction of dams and infrastructure up in the Mekong River stream in China has made a large impact downstream. Floodplains in six countries including southern China, Thailand, Vietnam, Burma, Cambodia and Laos have all been affected by the construction of dams upstream.[16] Generally, the floodplains are predictable in terms of the flooding season, which is the rainy season of the tropical monsoon. However, many people relying on its flows would argue that the river and its floodplains are now unpredictable due to the result of dam

[14] Bridge 2003, 260.
[15] Sichanthala 1996-97, 26.
[16] Li 2008, 170

constructions upstream in China. Many downstream countries have blamed the Chinese dams for altering the flood cycle season and its abnormal fluctuations in the flow of the Mekong River. The downstream populations who rely mostly on the river for fisheries and irrigation have noticed the water levels have gone up and down much faster than usual.

Physically, wetlands occur in various types of landscapes. Five basic landform types that determine the occurrence of wetlands are basin, channels, flats, slopes, and highland *(see figure 2.6).*[17] Basin landform refers to a wetland that may be deep or shallow with a concave bottom that has no external drainage with defined margins such as areas in ponds and lakes. When a wetland has a slope less than one percent with less diffuse margins, it is known as a flat. Slope landforms refer to areas with a slope that is greater than one percent while highland landforms are the convex areas on top of mountains.[18] A channel on the other hand, which often occurs in Laos, refers to a carved watercourse that always has clearly defined margins. Even though wetlands are relatively similar and widespread all over the world, they are uniquely different according to their geographical and hydrological features. The wetlands of the humid tropic area, for instance, are characterized by the monsoons and cyclone seasons. As a result, these areas have various types of tropical wetlands including the mangroves, freshwater marshes, swamp forests, river floodplains and deltas.[19] The main source of water for the Lao people comes from the Mekong River and its tributary channels. Naturally, these channels branch out towards the inland areas creating natural inland deltas and floodplains. Lao settlements are often found in these areas.

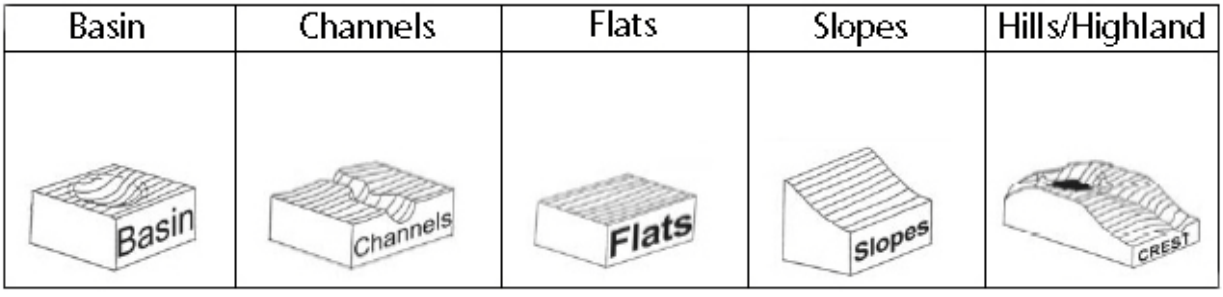
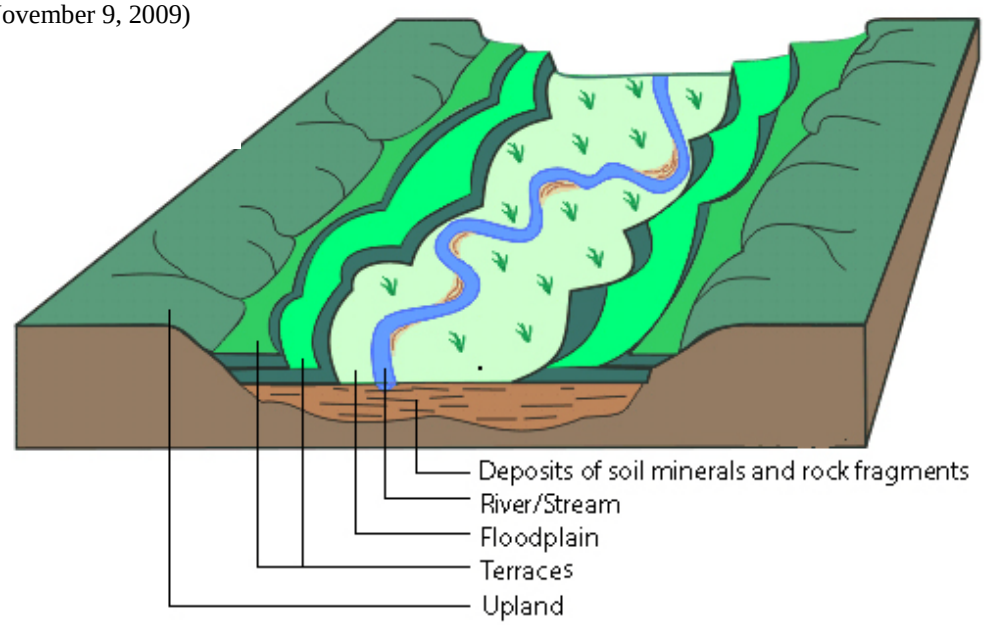



**Figure 2.5**: Landform categories of wetlands.
*Data from*: "Finlayson 2002, 44."

[17] Finlayson 2002, 44.
[18] Ibid., 44.
[19] Coughanowr 1998, 13-18.

Generally, the river channels are located at the lowest elevation in the site of a floodplain. A floodplain is the combination of sediments and soil deposits of minerals and rock fragments that were transported by the stream from upstream. The soil in these areas is often weakly developed compared to the terraces and particularly the upland soils. Due to its limitations, floodplain areas are considered hazardous areas for human activities and developments. It is the upland areas that are usually well developed since it has stronger soil properties and is at a higher elevation away from flooding. In the case of Laos for example, most Lao communities generally do not settle themselves directly on the floodplains but more on the terraces and the uplands due to the hazardous soil and strong current from the flood. These floodplains are usually fishing grounds during the floods, and become temporarily agricultural landscape during the dry season.

**Figure 2.6**: Floodplain Diagram.
*Source adapted from:*
"http://www.uwsp.edu/geo/faculty/lemke/geomorphology/images/04_fluvial_terraces.gif", (accessed November 9, 2009)




The combination of temperature, weather and climate pattern determines the geology, hydrology and the ecosystem of the water-land geography. Water and hydrology is one of the most important components in a wetland that soil, vegetation and fauna development depend on. The energy and nutrients are transported to and from wetlands by various aspects such as

precipitation, surface runoff, ground water, tides and flooding of rivers *(see figure 2.8).*[20] In the Mekong deltas of Laos, the nutrients and energy mainly comes from these combinations. It is associated with surface runoff from upstream China, precipitation and ground water of the existing conditions in the geography of Laos.

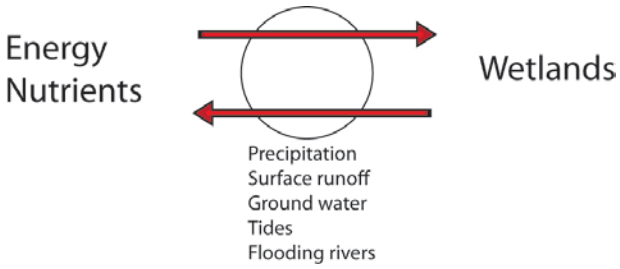



**Figure 2.7**: Wetland Diagram.
*Data adapted from* "Coughanowr 1998, 5."

Another aspect that makes up the hydro-ecosystem is the level of water with its unique flow patterns and the frequency of flooding. The river can change its course transferring sediment loads from one side of the floodplain to the other depending on the season.[21] Although the river appears to flow from upstream down in one direction, the water pattern does not flow directly downward or straight down. Instead, the deepest part of the stream moves from side to side along the river bottom depositing sediment on both sides forming bars of sediments called levee on the floodplains *(see figure 2.9).* This process influences not only all the living organisms in the water-land geography but also determines the soil and its properties.

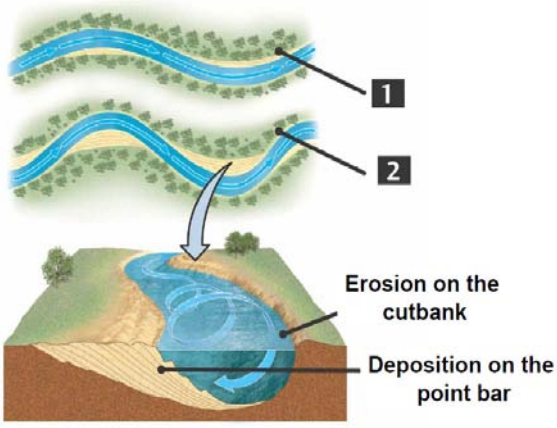



**Figure 2.8**: Water Pattern.
*Source:*
"http://geode.colorado.edu/~gtucker/Courses/geol1010/feb29_water3.pdf" (accessed November 9, 2009).

The natural landscape of water-land geography is composed of unconsolidated prepositional material derived from sediments being transported by the stream or river.[22] Generally, a great amount of debris and sediment from ground surface and the sides of the

[20] Ibid., 5.
[21] Bard, 2002.
[22] Ibid.

stream channel are carried by the strong current during flooding. These sediment loads then settle on the wetlands and eventually on the floodplains as the floodwater recedes. Sometimes, these sediments become part of the new layers of sand, gravel, mud and silt forming the site. Sediment loads make the soil become fertile and rich in nutrients. As a result, floodplains and parts of wetlands are the most productive areas of a river system.

There are many factors that influence the formation and properties of soil, including the sediment materials, climate pattern, living organisms, topography and time.[23] The sediments of the water-land geography are a wide range of minerals such as soil minerals, bedrock, sandstone, limestone and clay for instance. The mixture of these minerals and rock fragments drifts downstream and eventually ended up as deposits on the floodplains. Climate is another factor that determines the soil formation. For instance, the monsoon rainfall during the rainy season helps transport the sediments downstream. It also helps dissolve the minerals and transfer them deeper into the soil. In addition, depending on the temperature, the production of plants and organic matter also depends on warm and moist climates. There are microscopic organisms living in the stream that help produce soil particles and hold soil together as aggregates. [24] Topography also plays an important role in forming the site. For example, with the help of gravity, the natural slope helps rainwater move downward bringing soil minerals and rock fragments from the upland areas. The level of slope and length of the topography are also influenced by the velocity of the flow of rainwater. Faster flow results a thinner layer of soil surface. These thinner layers of eroded soil are known to be less fertile and weak in productivity.[25] Lastly, time also influences the soil properties and determines the formation. According to Bard and his workgroups, time allows the soil to develop into horizontal formations.[26] Take the site of Don Chan for instance, heavy rainfall and constant erosion with the combination of these influential factors prompted the formation and properties of the site resulting in water-land geography delta in Vientiane city *(figure 2.10)*. As soils age, they create and form horizontally as the original sediments are being replaced by the new ones.

---

[23] Ibid.
[24] Ibid.
[25] Ibid.
[26] Ibid.

**Figure 2.9**: Soil and site of water-land geography formation.
*Source:* "http://geode.colorado.edu/~gtucker/Courses/geol1010/feb29_water3.pdf" (accessed November 9, 2009).

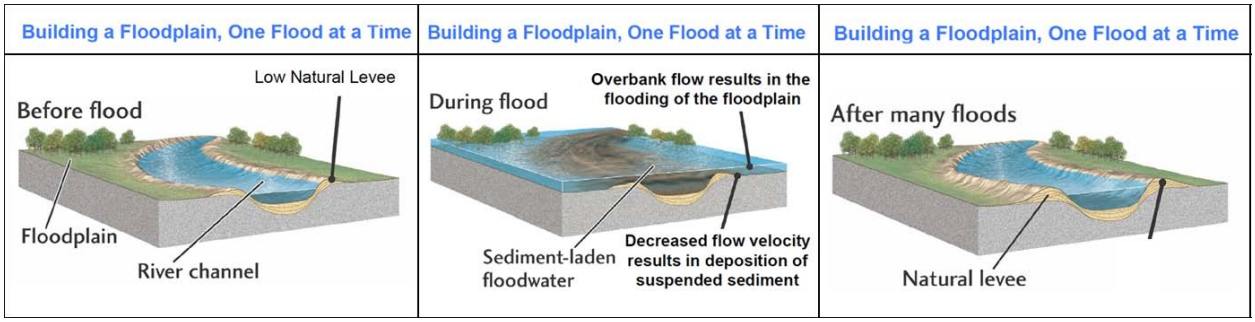



**Figure 2.10**: The Mekong floodplain in Vientiane between Laos and Thailand.
*Source:* "http://max-walsh.com/wp-content/upLoads/mekong_north_mekong-plain1.jpg" (accessed November 10, 2009).

During a flood, the soil of a wetland is either water-saturated on a permanent or periodic basis. These water saturations are waterlogged soils known as hydric soils.[27] These soils are low in oxygen and dappled in color. They contain high organic content and gases such as hydrogen sulfide and methane. Many plants and animals have developed and adapted specifically to the low oxygen content in the soil. For instance, since the low oxygen soils alter the nutrients and limit the plants' ability of respiration, the plants have developed to cope and adapted to the toxic level of the soil. Wetland plants have also developed structural and physiological adaptations to tolerate and regulate the conditions of flooding, temperature patterns and nutrient levels of the soil.[28] For example, some plants along the Mekong developed air space in their stems to diffuse oxygen while some plants developed special cells to cope with the toxic level. The animal and fish species also developed their own abilities and adaptations to adjust to the murky brown water conditions. Adaptation is an important aspect for not only all plants and animals that live along the river, but also humans as well. An article prepared by Mollot, Phothitay and Kosy with the support from the MRC Fisheries Programme and the Mekong River Commission stresses that the relationship between the southern Lao people and the Mekong River intertwine very closely. They addressed that the Lao people have become adapted with the seasonal rhythm of the river and developed an understanding of the ecology of their local environment by utilizing the natural resources of its dynamic ecosystem.[29] Furthermore, they value the water-land geography of the Mekong for its ecological role in the fisheries, forestry and agricultural production. They understood the ecological balance and its relationship between high quantity of fish production during the flood and high productivity of agricultural production during the dry season when the water recedes.

The water-land geography and its ecosystem and biodiversity are extremely sensitive to any changes in the hydrological system. A small change in the hydrological conditions can influence the changes in the ecosystem productivity. For instance, plants and vegetations in are constantly regulating hydrology through mechanisms such as transpiration, water shading, and sediment trapping. Because of a change in hydrology, the condition can alter the plants and its

[27] Coughanowr 1998, 5.
[28] Ibid., 6.
[29] Mollot 2005, 155-157.

development, which will eventually influence animals that depend on the vegetation for food and shelter. Additionally, plants and animals can also influence the natural hydrology. For instance, the giant catfish of the Mekong dig holes to hide, which help regulate the floods and provide a habitat for fish, turtles and other aquatic animals in the dry season. The ecosystems of wetlands provide not only habitation for animals, but also provide food and breeding sites. The relationship of hydrology and the ecosystem is closely entwined where one depends on the other. It is an important consideration to understand when planning to build developments on the water-land geography.

The impact of water-land geography is enormous. It significantly plays an important role in water transportation, climate, hydrologic cycle regulation, nutrient and biomass export, recreation, tourism, and biological diversity. Water-land geography protects the shorelines against storms and erosion, helps harness floods, recharges ground water, improves water quality, maintains ecosystems and conserves biodiversity.[30] During the event of flooding in riverbanks, it acts as a buffer, slows the water velocity down by absorbing the rain, and releases the water steadily. At the same time, it improves the water quality by filtering out the stream with natural a natural filter of soil and plants. Along with its valuable functions, it also provides resources such as forestry goods, wildlife products, forage resources, fisheries, minerals and water. Historically, water-land geography was considered as one of the main drivers that gave rise to the Lao kingdoms. Today, the water-land geography of the Mekong River still provides not only protein and nutrients to fish and plants for the Lao communities to sustain on, but also has become a key ingredient for the Lao economic and population growth.

[30] Coughanowr 1998, 8.

***The Mekong River at the Crossroads: Current Situations***

In the past, humans have always adapted to the Mekong deltas and its existing environment. The livelihoods and the agricultural systems were recognized as their adaptations to the environmental and the hydrological conditions. Recently, the adaptations along the Mekong River are beginning to shift towards controlling and regulating the river system. Adaptations have been small scale like agriculture and aquaculture, and larger scale such as hydraulic control structures like dam constructions and urban embankments.[31] These factors are beneficial in many aspects, but they also have environmental consequences that can affect the river system, its hydrology, biodiversity and ecology.

Since the Mekong River system is widely distributed to many nations in Southeast Asia, any human activity up in the upper basin can have a significant impact on the lower basin. For instance, the sediment loads of the Mekong is determined by both natural functions - such as climate pattern and channel morphology and human exploitation.[32] Significant changes in recent years of land-use, infrastructure, dam constructions, urban expansion and other human impact change the hydrology and sediment loads of the Mekong River. Millions of people rely heavily on the Mekong for a protein-rich diet,


**Figure 2.11**: The Mekong River basin.
*Source:* Walling 2008, 151

[31] Kakonen 2008, 205.
[32] Walling 2008, 150.

hydrology, and rich nutrients in sediment loads. These people are significantly impacted by these factors.

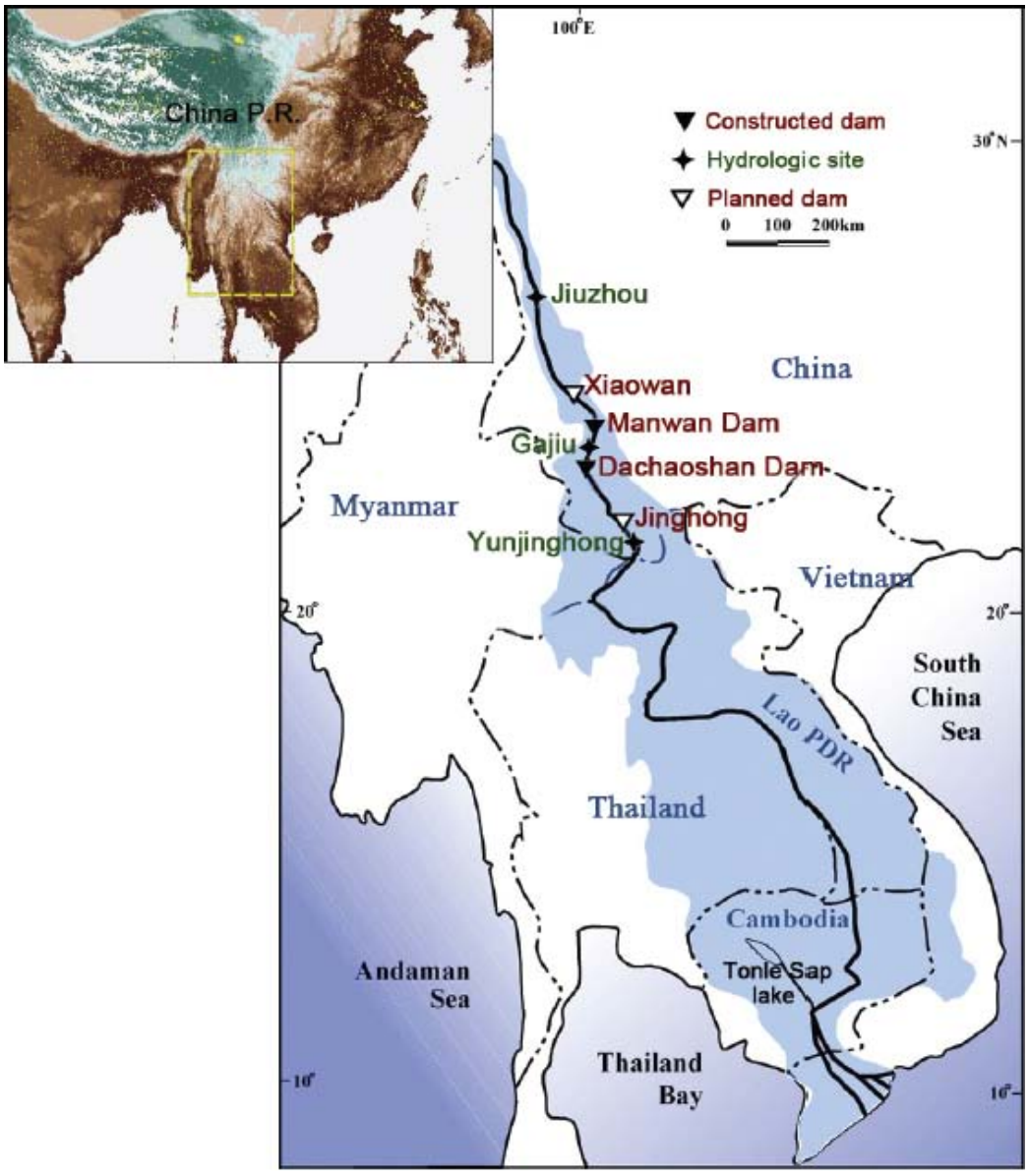
An article published by Walling on a Journal of the Human Environment in May 2008 suggests that the annual sediment load of the Mekong River is changing due to significant land-use changes such as dam construction and urban expansion. The increase of sediment loads can result in problems such as loss of conveyance capacity, loss of reservoir storage capacity in sedimentation and water distribution systems, and increased turbidity of river water.[33] There are benefits of the decrease in sediment loads; however, they can also negatively influence the ecosystems by reducing nutrient inputs on the deltas and floodplains, resulting in delta recession and shoreline erosion. From Walling's research and his comparison of annual sediment load data of the Mekong deltas, he found that the upper basin has experienced a dramatic increase in sediment loads while the lower basin including Luang Prabang and Vientiane experience conveyance losses of sediments due to the influence of dam constructions in the upper Mekong River.[34]

While the sediment loads of the Mekong River change, the water level corresponds to the rapid development in the upper stream. Many would argue that the water levels of the river are directly influenced by large dam constructions up in China *(figure 2.13)*. The construction of dams in the upstream blocks the path of fish migration, threatening the ecology and biodiversity that reduces the catches upon which millions of human lives depend on.[35] The declining fish stocks and unpredictable water levels made life more difficult for downstream communities. On the other hand, the Chinese officials have assured many Southeast Asian countries that the dams will have positive environmental impact. They suggest that the dams allow for flood control, irrigation, navigation, pollution control and aquaculture downstream. The hydropower reservoirs will also help generate electricity to replace polluting fossil fuels such as coal and oil. Conversely, the cause of drought and hydrological changes of the Mekong are due to global warming and climatic factors such as solar activity and low rainfall in the lower basin.

---

[33] Ibid., 150.
[34] Ibid., 151-157.
[35] Li 2008, 170.

**Figure 2.12**: Dam constructions in the upper Mekong River.
*Source: Li 2008, 171.*




Research prepared by S. Li, a PhD candidate, and D. He, a senior researcher at Asian International Rivers Center of Yunnan University, suggests that the water level of the Mekong is directly influenced by climatic factors and solar activity while human activities including dam construction have little influence on the water-level variations.[36] The water level data and methods were based on records of daily, monthly and seasonal change at various hydrologic sites

[36] Ibid, 170-177.

in China. The arguments simply do not hold up to scientific proof. Their scientific evidence shows that dams in China do not cause the low water levels and its association of drought in the lower Mekong basin. They further stressed that "dam constructions are relatively smaller than the total volume of water flowing annually out of China." [37] The dams are not used for irrigation or consume water in any way other than for power generation. Even so, power generation tends to increase the river flow in the dry season while reducing the flow in the flooding season.[38]

Although, Li and He's research is a great application for analyzing the water level variations of the Mekong River in the relationship between the upper and lower basin, the Chinese dam construction still made a large impact on the environment and the river's ecology and biodiversity. The synthetic structures such as dams and embankments are created for flood protection, but also generate new risks, particularly for the poor population as suggested by Kakonen, a master's degree student and a member of the Water and Development Research Group at the Helsinki University of Technology. She refers to the situation in Vietnam where they are striving for a more sustainable future by examining more adaptive measures in relation to the changing water flows of the Mekong and the management of natural resources.[39] An effective water management system that has been introduced in Vietnam resulted many positive things such as less floods in the flood-prone areas, decline of property damage, and strengthening of the rice cultivation.

However, new risks that came with man-made structures also significantly affected the region's social, economical and environmental costs. For instance, after a few years of the dike installation, the crop production by the embankment areas is less due to the reduction of natural soil fertility. As a result, the poor farmers now have to invest in agrochemicals.[40] It also changed their working patterns since their traditional resting time during the flood is taken away from them. Furthermore, Kanoken also argued that if the water level exceeds the safety margin of the new controlled environment, the resulting damage would be greater than before. The destruction of the dike structures that once protected the livelihoods of the people would become

---

[37] Ibid, 177.
[38] Ibid, 170-177.
[39] Kakonen 2008, 205-212.
[40] Ibid., 208.

bigger risks. In addition, she added that, "the control system is also a transboundary issue" which was originally designed for the Vietnamese interests, but also caused significant impact on the Cambodian side.[41]

Infrastructure and dam construction is not the only problem that has a large impact on the hydrological pattern and surface chemistry of the Mekong River. Penny argued that the scale of flooding and its hydrological pattern of the Mekong River would also change due to the influence of global warming as Li and He stated in their article. When the sea level rises, it will cause the Mekong water level to rise dramatically resulting in floods in the Mekong deltas and floodplains. Penny further applied the proxy environmental data from the Holocene flooding of the Sunda shelf due to the constant postglacial rise in global sea level as evidence suggesting that during this period, "protoriver deltas were submerged and tidal conditions were established inland along former freshwater floodplains."[42] The situation of the Tonle Sap Lake in Cambodia for example will be greatly affected. The Tonle Sap Lake is known to serve as the main socioeconomic and ecological sources for millions of Cambodians. With the help of the southwest Indian monsoon, the Mekong floods causes the Tonle Sap River to reverse its course and flow upstream flooding the lake and its inlands. Because of the increase of global temperature, the sensitive changes would alter the behavior of the Asian monsoon with the help of the rising sea level resulting in catastrophic flooding events that will put millions of lives on the line. The regional-scale modeling and instrument data of the Cambodian government is insufficient and poorly examined. As a result, Penny concluded that having a comprehensive modeling system to predict and analyze the consequences of climate-driven hydrological change for floodplains and wetlands, food security, and biodiversity in the Southeast Asian region would be significant.[43]

There is no doubt that the Mekong River is experiencing rapid transitions and changes, both from human activities and developments, and natural climatic factors. Although, humans have always adapted to the Mekong deltas and its existing environment in the past, controlling

---

[41] Ibid., 208.
[42] Penny 2008, 165.
[43] Ibid., 167-168.

and regulating the river system have become mainstream in the region today. One of the most remarkably human constructions is large hydropower dams, which is recognized as an important component in the economic development process. However, the negative social and environmental impact on the ecological systems and the livelihoods of millions of people are huge. The Mekong River is an important transnational resource. It is important to address the issue of various water uses and take them into consideration. The dam construction in the upper basin such as China may leave countries in the lower region of the Mekong with food and water scarcity in the future. It is the flow of the Mekong River that always nourishes life. It is clearly a foundation of many cultures in Southeast Asia including the Lao culture. Even though we are living in a modern world and have adopted a modern lifestyle, the Mekong is still flowing. It is just a matter of knowing how to use it and respond to it.

## Chapter 3: The Concept of *Baan*

**Figure 3.0**: Arial view various *baan* in the city of *Luang Prabang*.
*Source*: "http://www.flickr.com/photos/peace-on-earth_org/3043030664/sizes/o/"

Lao saying, *"Many dwellings become a village, many villages become a city, many cities become a province…"*

With a small population living in a group of dwellings in various sizes and scales along the Mekong River, the Laotians started to refer to themselves as a small community in the notion of *baan* or village. As the population and the numbers of built environments increased due to agricultural and economic surpluses, *baan* began to expand along the river, transforming the landscape and the community into many *baan* with a large span of rice paddies and agricultural landscape. The investigation of the concept of *baan*, and its unique characteristics will be the focus on this chapter. In addition, this chapter will present its morphology and organization of grouping patterns responding to the Mekong River.

***Characteristics of Baan and Its Relationship to the River***

The term *baan* is commonly used in Laos when referring to a village, which does not necessarily mean a group of extended families by kinship relations, but a combination of all. In some cultures today, the term village may become linked directly or indirectly with pre-modern or rural areas, but in Laos, it can be described in both the rural and urban context. The concept of "*Baan*" or "*Muu Baan*" started from the early settlements in Laos when people gathered in a group of dwellings living and helping one another in the wet-rice cultivations and agricultural production along a body of water such as streams, rivers, ponds and lakes. Water was the most important criterion for *baan* while the second was earth. For instance, the river was an essential component in establishing a settlement because it provided water, food, mobility and security. When the two principles satisfied the early Lao settlements, they proceed to settle down.

A traditional *baan* is normally self-sufficient or self-contained. It is dependent on water irrigation or a body of water for wet-rice cultivation and agricultural production. The *baan* community obtains all their basic needs from the river and their agricultural and rice production. Generally, *baan* is built in a group of dwellings along a river valley ranging from 40 up to 200 households with a population that reflects the number of households.[44] Each household then contains a family or sometimes extended families up to eight persons. As the population in the village increases while land is becoming limited, they usually expand the village along the river. Some people would migrate to the new areas or to other villages either individually or by groups of families.

However, a *baan* is not made up of only households, but also other structures such as retail, Buddhist temples, and industrial, governmental or civic buildings. According to the translation of Sichanthala, a *baan* is comprised of nine components, which include agricultural areas, residential clusters, Buddhist temples, public spaces between the residential area and the Buddhist temple, an area for the village leader, offices, retail areas, industrial areas, and educational areas.[45] The areas that take up most of the landscape include the agricultural landscape, public spaces, and the Buddhist temple areas *(see figure 3.1)*. The agricultural part

[44] Savada 1994. http://countrystudies.us/laos/53.htm (accessed August 20, 2009).
[45] Sichanthala 1996-97, 33-34.

usually takes up most of the space and usually is located near a body of water that is suitable for agricultural plantation and rice production. The temple area on the other hand is often near the living area located to the east of the village.[46] Generally, the public area refers to the space that sits between the living area and the temple area, which includes public space for social interaction, religious preparation, and even burial grounds. As for the village leader area, usually his or her home consists of not only the living area but also offices and a meeting hall.

The general living area contained within the Lao village in figure 3.1 is the residential clusters. Typically, they are arranged in a linear pattern along the Mekong River on a higher elevation than the agriculture landscape for flood prevention. Along with the residential clusters are the business components including industrial, commercial and retail areas such as shops and markets mixed together in the village. In rural areas today, retail and shops are typically small while the industrial structures such as rice mills and ice factories are much larger. In an urban area on the other hand, the commercial and retail spaces are large markets, retail shops and shopping centers. Apart from the industrial component, schools are usually situated near the living area and public area for the community to commute easily. Traditionally, Buddhist temples are also part of the educational component in the Lao village system. Buddhist monks were known to teach not only religious aspects to the community, but they were also teachers for the younger generations.

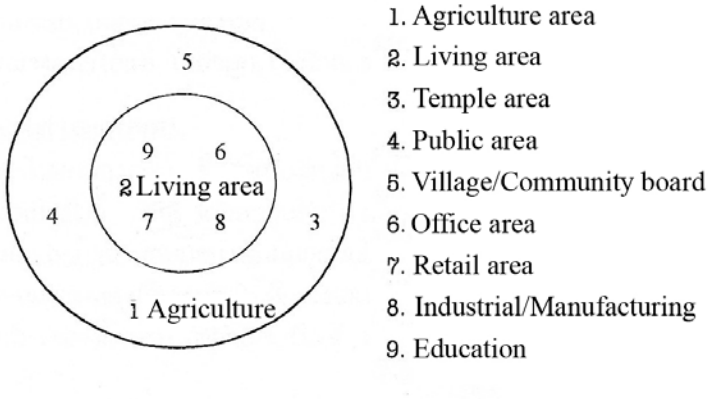



**Figure 3.1**: Characteristic of a Lao village. *Source*: Data from "Sichanthala 1996-97, 34."

[46] Temples are located to the east of the village because the wind can bring dinner smell to the temple. Lao Buddhist monks only can eat early breakfast and lunch. They are not allowed to consume after noon. Sichanthala 1996-97, 33-34.

The relationship of the living area and the working area is important in the old traditional Lao lifestyle *(figure 3.2)*. A home or dwelling is considered the living area while a working area refers to agriculture, which includes both rice farming and plantation. This type of lifestyle still exists today, particularly in rural areas. In the urban context on the other hand, working may now refer to other areas such as tourism and commercial business.

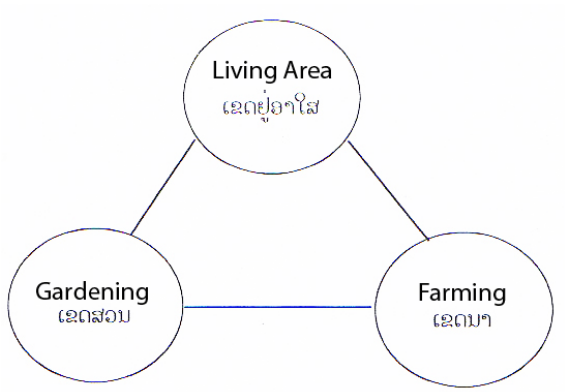



**Figure 3.2**: The relationship between living and working. *Source*: Data from "Sichanthala 1996-97, 35."

For the most part, the settlement pattern of *baan* is organized in an area that is near a body of water or has the access to water such as rivers and streams. They form a boundary between life on the land and on the river. A village settlement that is far from a river is usually near a lake or pond that has been filled up with rainwater during the rainy season. In the past, adapting to the river's rhythm was vital for the Lao people who settled along the Mekong delta. After settling down, *baan* and its dwellers then adapted to the existing climate, the environment and the river. Adaptation was essential to the daily activities for the Lao communities since their survival depended on their wet-rice cultivations, agriculture productions and raising livestock – all of which required a source of water. In fact, most Lao villages along the Mekong deltas are dependent in rice production.[47] While the river provides fish and water, the fields provide rice and vegetables.

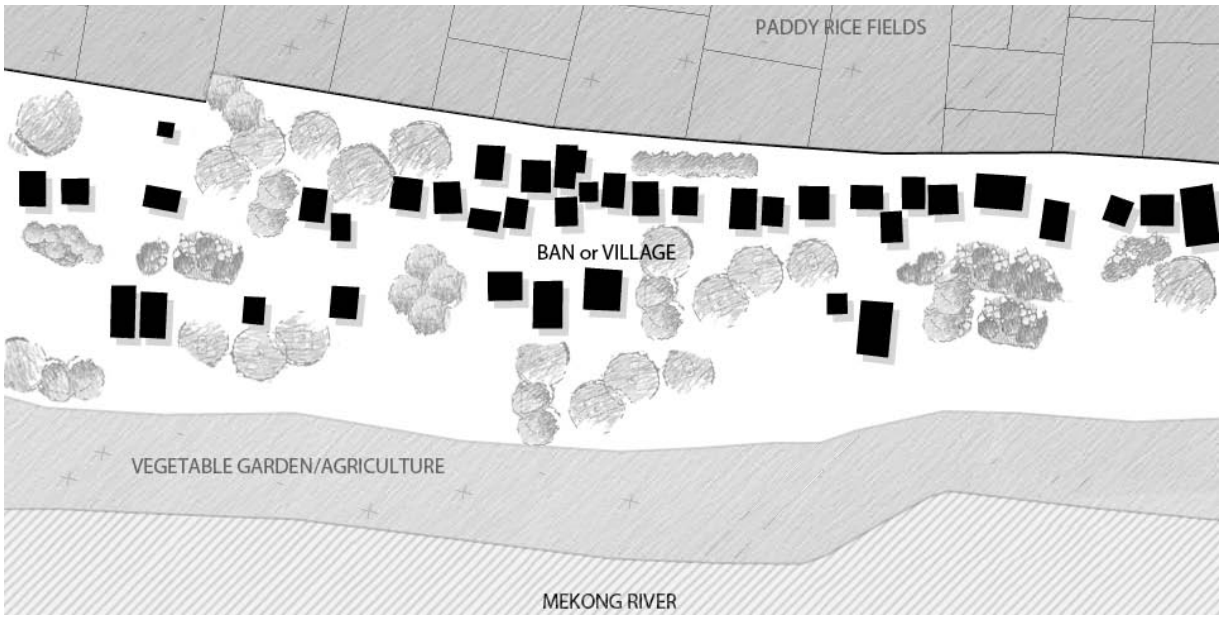
Normally, a Lao *baan* along the Mekong River is generally situated on a higher elevation than the river itself in preventing it from flooding. Additionally, villagers would raise the bases of their dwellings using stilts with high posts to prevent not only flooding, but also use it as a small farmyard and livestock shelter beneath the floors. Villagers would grow vegetables and fruits near the shore because of rich fertile soil near the water. It was also convenient to use the river water to water the plants turning the shoreline into a rich agricultural landscape. Furthermore, most villagers also have small vegetable gardens within their living area or

[47] Savada 1994. http://countrystudies.us/laos/53.htm (accessed September 20, 2009).

household compounds. Each of these households would be an individual unit walled off from its neighbor. For most of the units, their orientation is usually situated to respond to the river by having its entrance facing the water. It reflects their understanding on the importance of the river and its role in their daily lives.

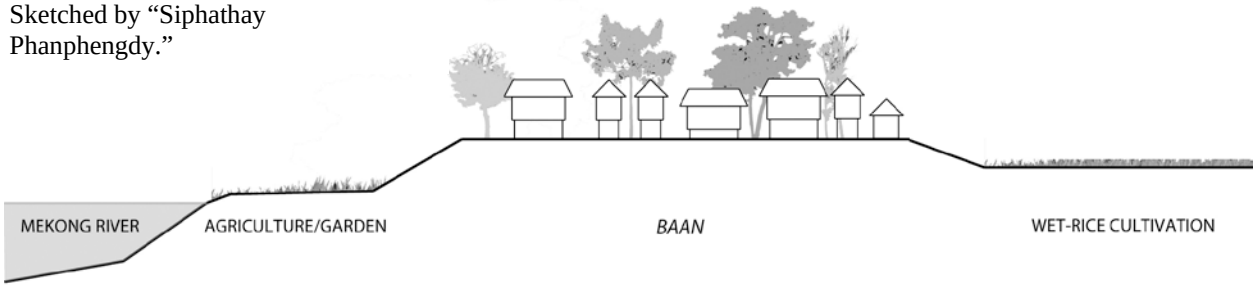
Since most of the shore and its floodplains are designated for agriculture, the patty rice fields are usually set away from the river behind the village to prevent it from flooding. Commonly, rainwater and small canals are used to irrigate the paddy rice fields, which is easier to control than river water.[48] The villagers begin rice production from May to late November during the rainy season when the rain floods the irrigation system and river floods the floodplains. After transplanting and harvesting, the rice is then stored. Villages that are located on the mountain hills far from a river or have inadequate levels of terrain practice slash-and-burn or swidden rice farming instead of paddy rice cultivation.[49] It is a practice of cutting and burning the woodlands to provide nutrients from the ashes into the soil to create agricultural or rice farming fields. Although it is less efficient and ecologically destructive, it provides higher yields for less work than paddy rice cultivation.

**Figure 3.3**: *Baan* Lao along the Mekong River in plan. *Source*: Sketched by "Siphathay Phanphengdy."




[48] Clément 2003, 5-6.
[49] Savada 1994, http://countrystudies.us/laos/53.htm (accessed August 24, 2009).

**Figure 3.4**: *Baan* Lao along the Mekong River in section. *Source*: Sketched by "Siphathay Phanphengdy."




Historically, the households and buildings of each *baan* is usually separated by rice fields or five or more kilometers of non-occupied landscape. It is still common, particularly in the rural areas today. For rural areas, *baan* can easily be recognized because they are far apart from one another. In figure 3.5 for instance, the transition space in the rural areas of Ban Xiengda and Ban Na Khouay are separated by a buffer zone of unoccupied space of forest and agricultural landscape. In dense urban areas on the other hand, about one kilometer or less separates the village settlements.[50] Usually, there is a road network and sometimes a zoning system becomes the transition space that separates *baan* in the urban area rather than agricultural and non-occupied space like in a rural area due to the limitation of land and density. An example of this urban transitional situation is shown in figure 3.6. It is the major road that runs parallel to the Mekong River separates Ban Khunta, Dong Pasak Village and Ban Wattay in the Vientiane municipal. Furthermore, a mixture of secondary roads and a change of landscape organization also identify the division between Ban Khunta and Dong Pasak Village, which was developed much later when the area used to be an unoccupied area.

Most of the time, *baan* in urban area with high density usually are shop-houses. According to the authors of "Lao House", Sophie Clément-Charpentier and Pierre Clément suggested that there are two types of *baan* settlements today.[51] One is open households, which refers to buildings that have large open land, particularly in rural areas. The other one is shop-houses that are clustered terraced buildings, which sometimes share walls and roofs with narrow fronts and deep rears.

---

[50] Ibid., http://countrystudies.us/laos/53.htm (accessed August 22, 2009).
[51] Clément 2003, 211-217.

**Figure 3.5**: Separation space between each *baan* in a rural area.
*Source*: Data from "Google Earth 2009."

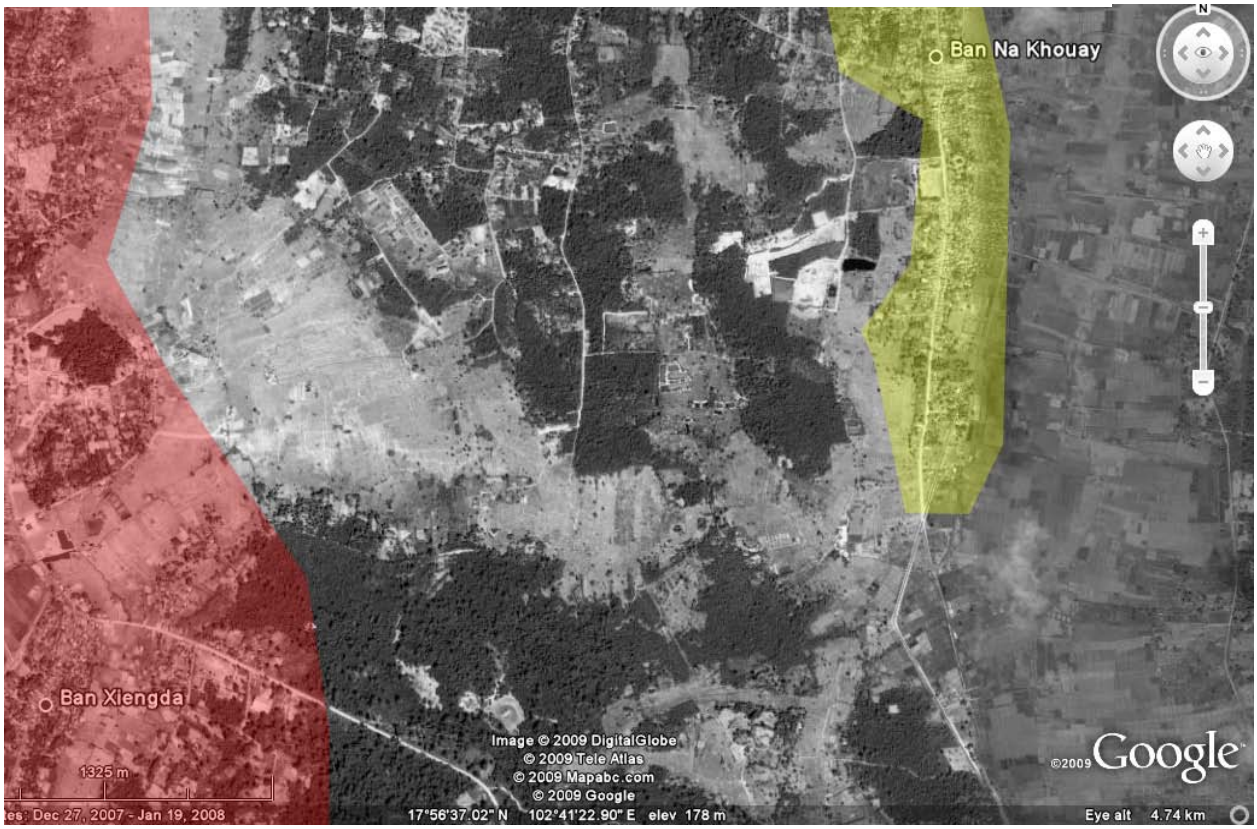
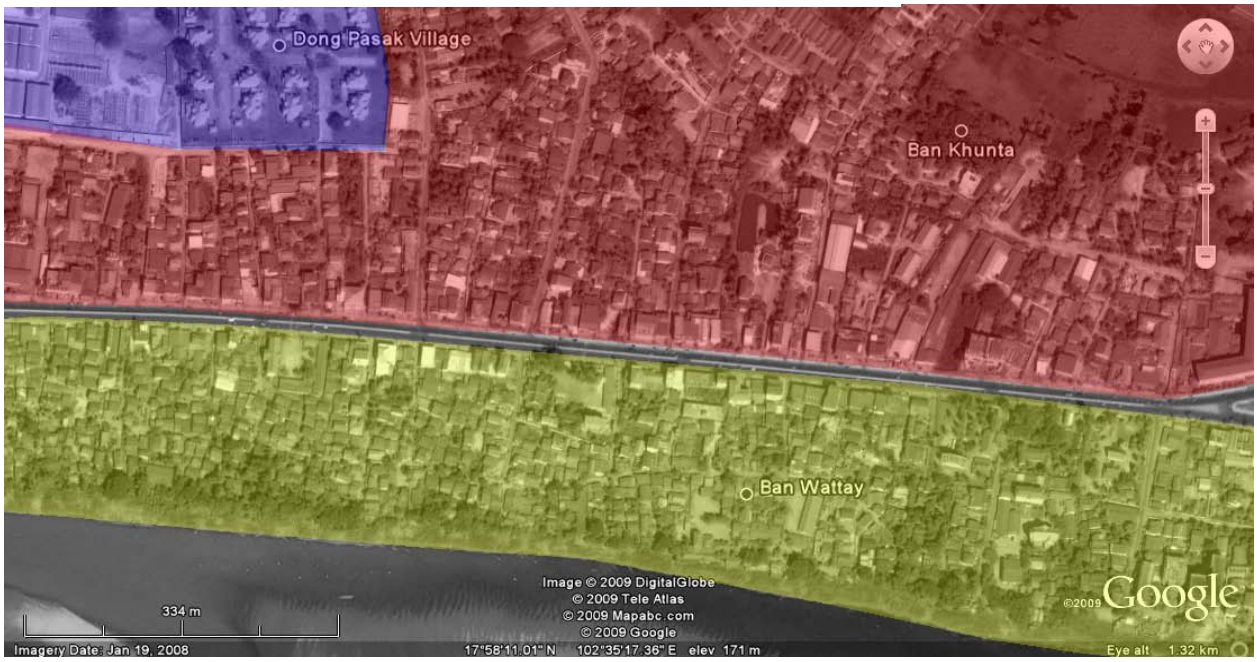



**Figure 3.6**: Separation of *baan* in an urban area of Vientiane.
*Source*: Data from "Google Earth 2009."



***Morphology and Grouping Pattern***

The grouping pattern of *baan* Lao in Vientiane varies from place to place depending on the terrain, its location, situation, natural environment and orientation to its immediate landscape such as the Mekong River. According to the analysis by Sichanthala from 1996 to 1997, he investigated the *baan* arrangement in four areas along the Mekong in Vientiane including Baan Sikhay area, Baan Bor Oh, Baan Hom, and the Suan Muan district area.[52] However, this article will further reexamine these patterns and investigate another additional arrangement that is much more current and in an urban area of Muang Sisattanak, which is also along the Mekong River in the city capital of Vientiane *(see figure 3.7).* The village arrangement patterns that Sichanthala introduced are organized in the following:

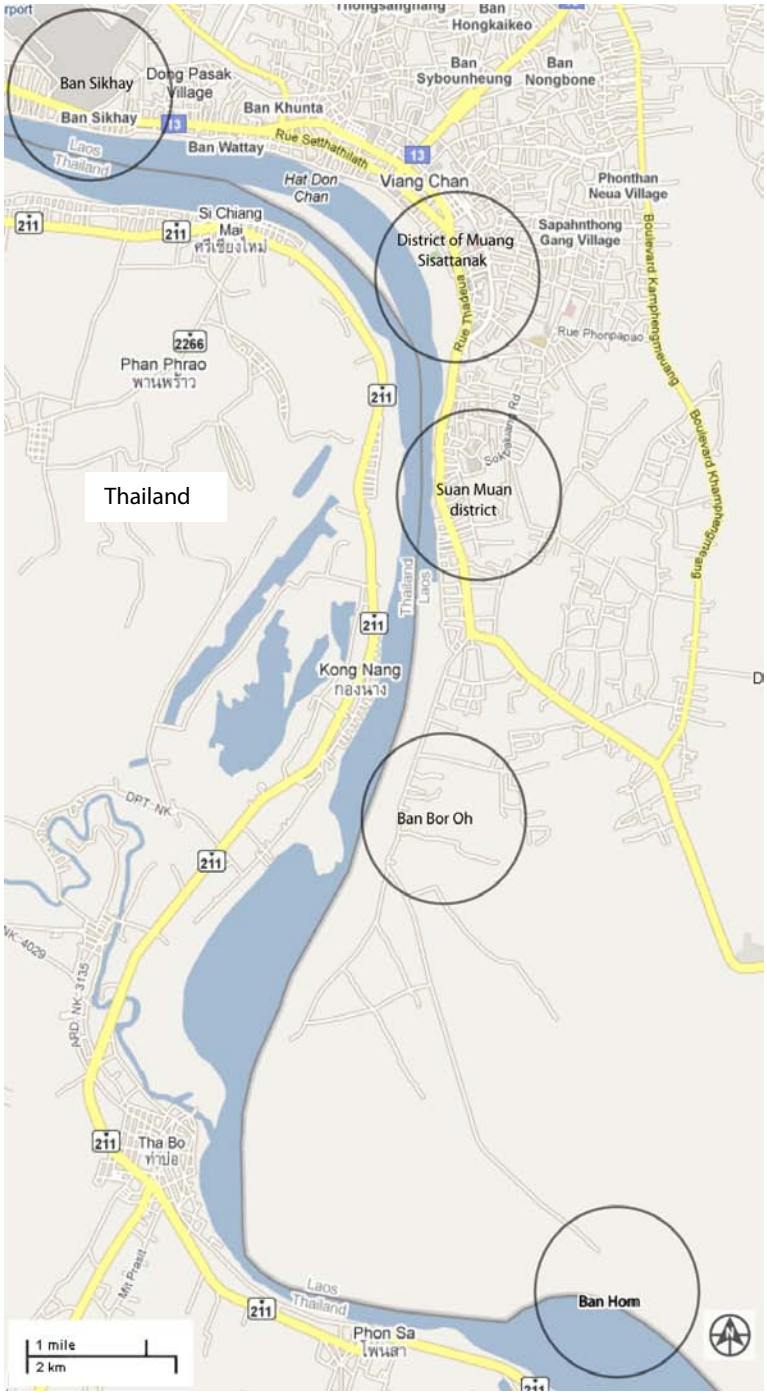



**Figure 3.7**: Reexamining Sichanthala's investigated areas and another additional urban area for pattern studies.
*Source*: Data from "Google Map 2009."

[52] Sichanthala 1996-97, 33.

Branch or chain pattern, a village type that is planned out according to the network of roads that branch out from primary routes to secondary paths that interconnects and intersects with one another.[53] The network is driven by the nature of the social and economic development along the river delta that contains secondary pathways that acts as branches expanding outward from its main artery. The settlements were established along the Mekong River before the villagers created pathways that able them to move freely in and out of the village. As the village becomes populated, the secondary pathways then were created to further maintain the movement not just in and out of the village but also connecting to other pathways that lead to other villages near by. This pattern can be pointed out in figure 3.9 of Baan Bor Oh area. It is evident that the primary road network of this village is parallel to the Mekong River and its secondary routes branches outward away from the river connecting to other inland villages.

**Figure 3.8**: Conceptual drawing of Branch pattern.
*Source*: Sketched by "Siphathay Phanphengdy."

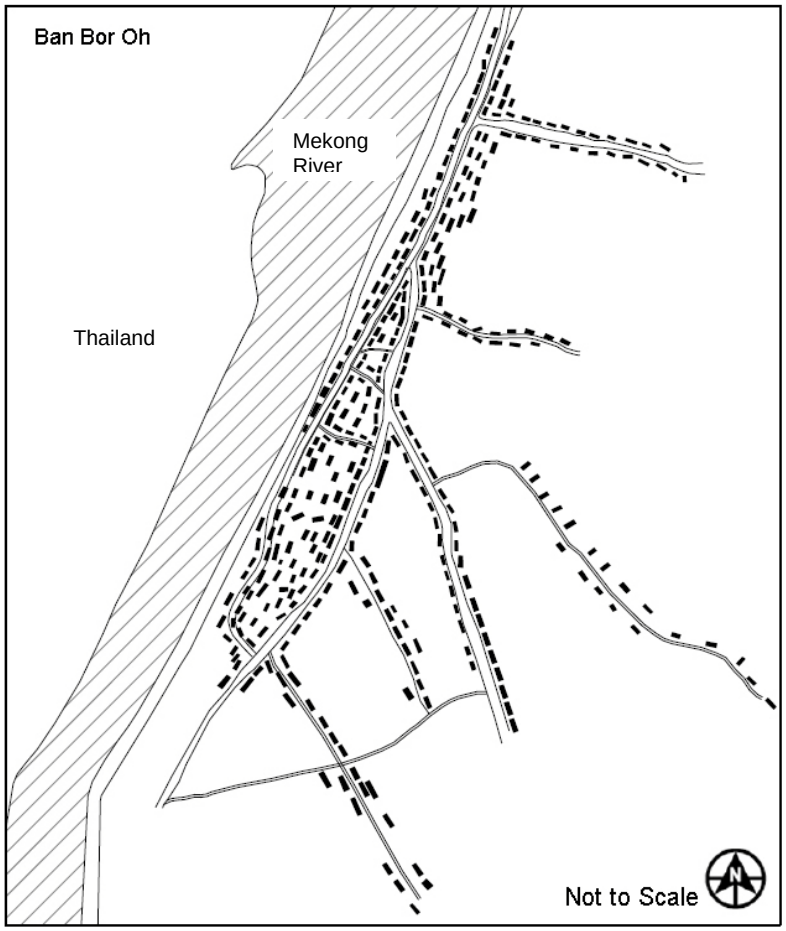



**Figure 3.9**: An example of branch pattern organization in Baan Bor Oh area.
*Source*: Modified from "Sichanthala 1996-97, 40."

[53] Ibid., 33-43.

Radial pattern, laid out according to the existing site in a circular urban arrangement with a common center or central axis.[54] This type of urban layout often appeared in great cities such as Paris and Rome, which are built around an open core such as a common plaza or a square. For Laos, a village can be organized around a central royal monument or a Buddhist temple. The radial pattern can also be traced in some areas of Vientiane city due to the influence of the French during their colonization. In the Suan Muan district area for instance, there is a notion of radial patterns in the road network located on the bottom of figure 3.10, which gives a different impression of serenity to the layout. The French have established a central monumental clock tower in this area. Along side of that, there is also a sense of common centers such as courtyards within the building arrangements, particularly the Buddhist temples.

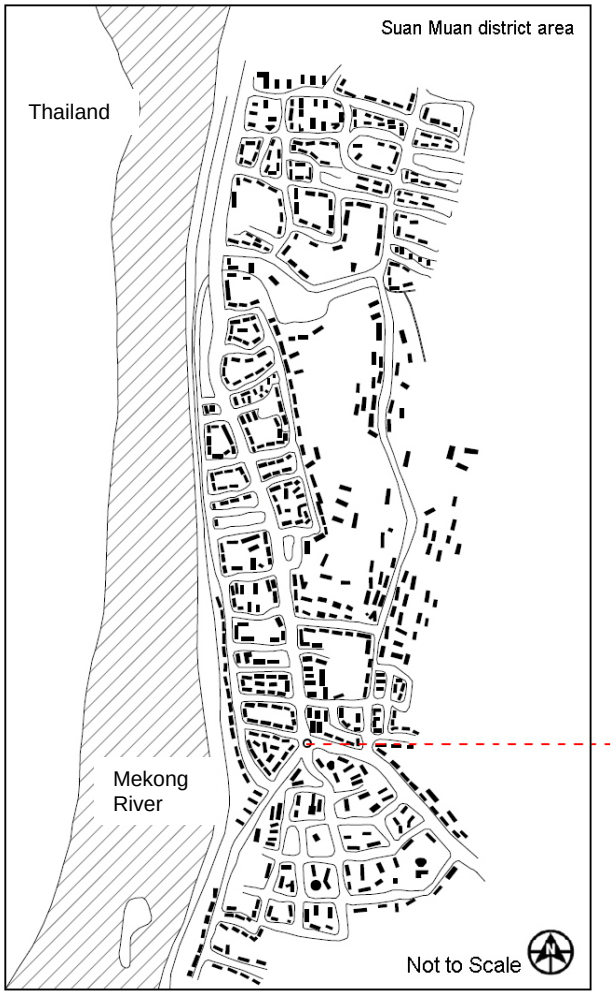


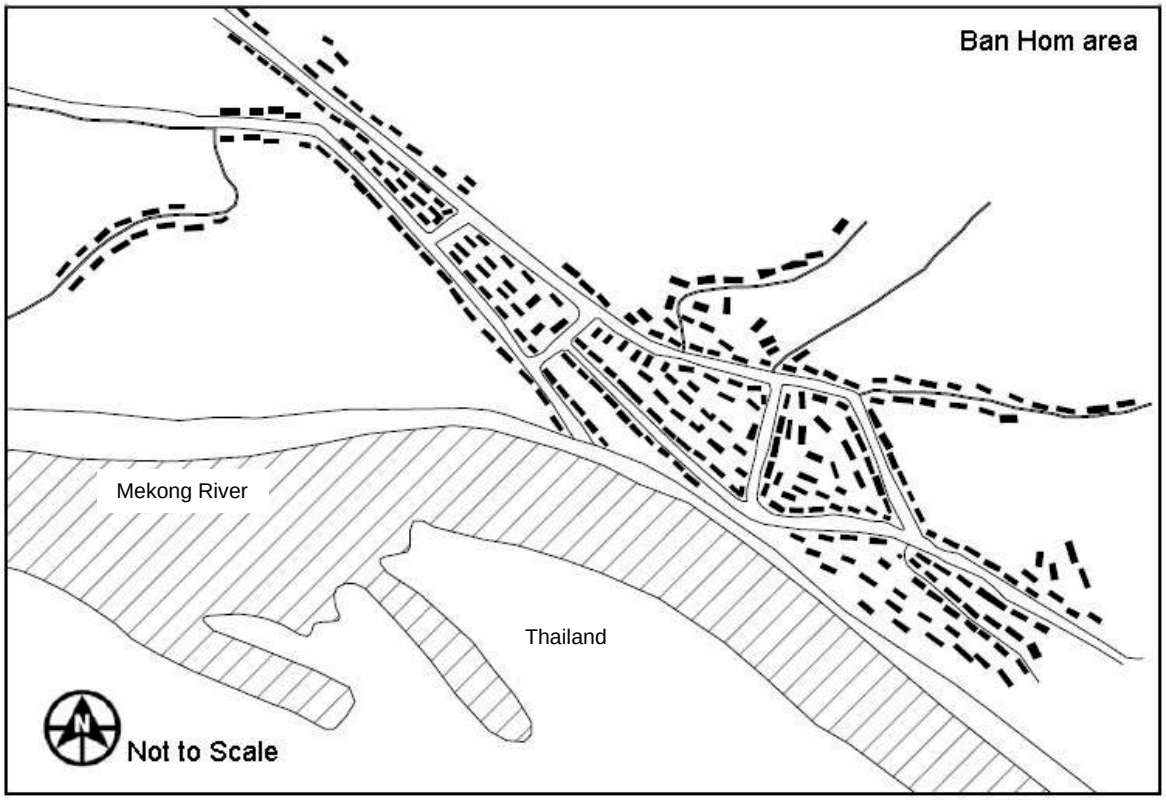

**Figure 3.10**: An example of radial centric pattern organization in Suan Muang district area. *Source*: Modified from "Sichanthala 1996-97, 39."

**Figure 3.11**: The historical clock tower built by the French. *Source*: Taken by "Siphathay Phanphengdy."

[54] Ibid., 33-43.

Linear, a type of arrangement that is organized in a linear pattern along a valley or a delta and parallel to a river.[55] The network organization is often located at a higher elevation than the river to prevent the village from flooding. This complex linear pattern is the most common arrangement that has been adopted throughout Laos, particularly along and parallel to the Mekong River.[56] Unlike radial village, it has no obvious center or central space. It is a pattern that develops before the branch pattern. Instead of branching out from the primary routes, the organization is dictated by its primary linear arrangements with primary pathways that parallels to the river with no distinct secondary pathways. In figure 3.10 for example, this linear arrangement pattern is noticeable in the area of Baan Hom. The layout pattern of *baan* and the major roads are parallel to the Mekong River, which reflects the villagers' daily activities and their association with water and agriculture.

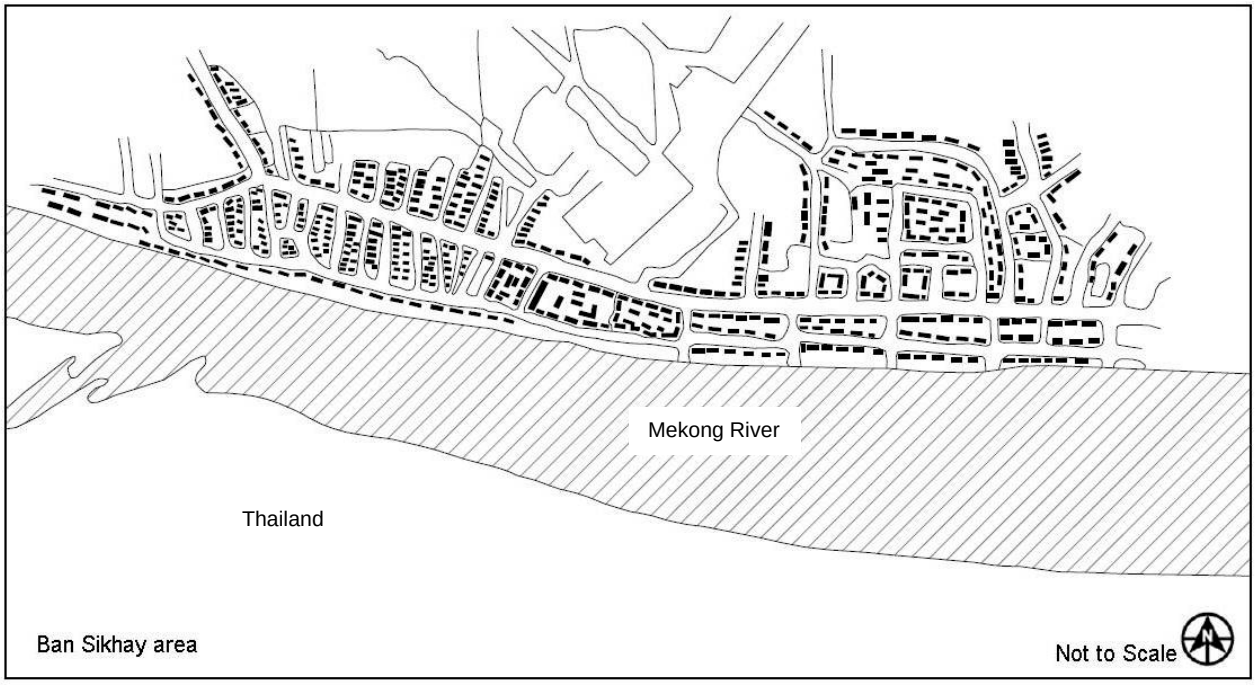
**Figure 3.12**: An example of linear pattern organization in Ban Hom area.
*Source*: Modified from "Sichanthala 1996-97, 41."




[55] Ibid., 33-43.
[56] Clément 2003, 5-6.

Parcelated, fragmented pattern, arranged in a land division type of neighborhood or divided into blocks with the existing road network in a zoning ordinance-like pattern.[57] There is also a notion of a linear component that reflects the river. It is because the early settlements were formed in a linear pattern along the Mekong. Moreover, when the area becomes dense, the villages rearranged themselves into groups of blocks. This grouping or zoning pattern is usually established in a populated area, particularly in urban areas like the city of Vientiane. As the population and households increases, the villages are arranged in a group of blocks by a network of streets. Similar to the United States, these blocks determine certain lot size, land use, building heights, density, setbacks and other aspects of property use. A good example of this organization is the Baan Sikhay area in figure 3.12. It is arranged in a combination of blocks or zones and in a linear pattern in which the primary and secondary roads are parallel to the Mekong River.

**Figure 3.13**: An example of parcelated or fragmented organization in Ban Sikhay area. *Source*: Modified from "Sichanthala 1996-97, 41."




[57] Sichanthala, 33-43.

From the investigations of the four pattern layout studies, it is perceptible that the *baan* configuration and layouts are not fully organized based on a grid system but rather more organic. There is a sense of legibility that provides recognizable routes and intersections within all of the four areas that Sichanthala investigated. The notion of ease of movement is also there. Most *baan* are all connected by one or two major roads and intersected by secondary roads, which create good accessibility and ease to move through. Furthermore, the arrangement patterns along the Mekong River basin reveal much about the Lao attitudes towards their rivers and their complex relationships with them. The Mekong River provides Vientiane a unique character and adaptability for the *baan* to respond to socially and economically.

Despite a great deal of different grouping patterns of *baan*, it appeared that the existing use of land in the four areas that Sichanthala investigated in 1996-1997 was unclear if they were all primarily residential or mixed-use due to its size and scale. It also explained that he did not verify the social interpretation and building types in the *baan* cluster within the four locations. Since he conducted the study over ten years ago, many of these areas today have become more developed and urbanized with more residential and commercial components, particularly in the Baan Sikhay and Suan Muan area since they are located near the inner part of Vientiane city. These areas must of have changed dramatically due to both economic and population growth. In fact, the urban population in the municipal of Vientiane today has become much wealthier, which has transformed the social status of low income working-class into middle class and upper class. As a result, the clusters of households in the *baan* system are now much tightly packed and denser than 12 years ago.

Additionally, the four patterns that Sichanthala proposed is still evidently visible in the urban fabric today, but the old models that once described the layout patterns have given way to a much more complex structure that adds up to the denseness to provide for the continuation of urban growth, particularly in the inner city areas of Vientiane. As the city is becoming much denser today than before, the pattern of *baan* will appear more intricate and complicated. Therefore, it is necessary to examine a much more recent area of *baan.* For example, the city center of Vientiane will be used to investigate its characteristics and its relation to the density of the urban layout.

Like most of today's urban areas in the Vientiane city center, the density of district of the Muang Sisattanak area is defined by a major road, which intersects minor roads creating different parcels or fragmentations of land *(figure 3.14)*. There is also the relationship of the Mekong River to these *baan* settlements. The network of major and minor roads is predominantly parallel to the river while the clusters appear in groups some distance away from the river. This urban *baan* pattern in the inner city is quite different and much more complex than the four areas that Sichanthala investigated in 1996-1997. The *baan* arrangements in this area used to line up along the Mekong River as *Sichanthala* would describe as a linear pattern. All of the landscape between various *baan* and the river once became a fertile agricultural landscape for the Lao communities in the dry season. During the rainy season on the other hand, the river floods all of the landscape and sometimes the water level rises all the way to the city elevation. Then the Lao government created embankments pushing the waterline outwards creating a large landfill to prevent the city from flooding. At the same time, it was also an area for urban expansion resulting in the only high-rise building in the city on the Mekong delta *(figure 3.15)*. As a result, the traditional organization of *baan* and its grouping pattern now becomes layered underneath today's urban fabric.

The existing physical urban cluster in the Muang Sisattanak area consist of many different building categories including, hospitality, Buddhist temples, commercial, education, civic, medical, residential, and mixed-use buildings, which is a combination of shop-houses and multipurpose buildings. Figure 3.15 shows three urban villages of Baan Phiawat, Baan Simuang, and Baan Thatkao alongside the landscape of Don Chan next to the Mekong River. It appeared that all of these three urban villages have what Sichanthala suggested being in the characteristics of *baan*. For instance, each baan has a residential component, civic and commercial buildings, and its own Buddhist temple while the education element is situated within the proximity of each *baan* as he suggested. However, the components that Sichanthala did not mention in his analysis include the hospitality, medical and mixed-use buildings, which are later integrated into the *baan* system. It also suggests that these components are part of today's urban *baan* characteristic.

**Figure 3.14**: The density of district of Muang Sisattanak area. *Source*: made by "Siphathay Phanphengdy."

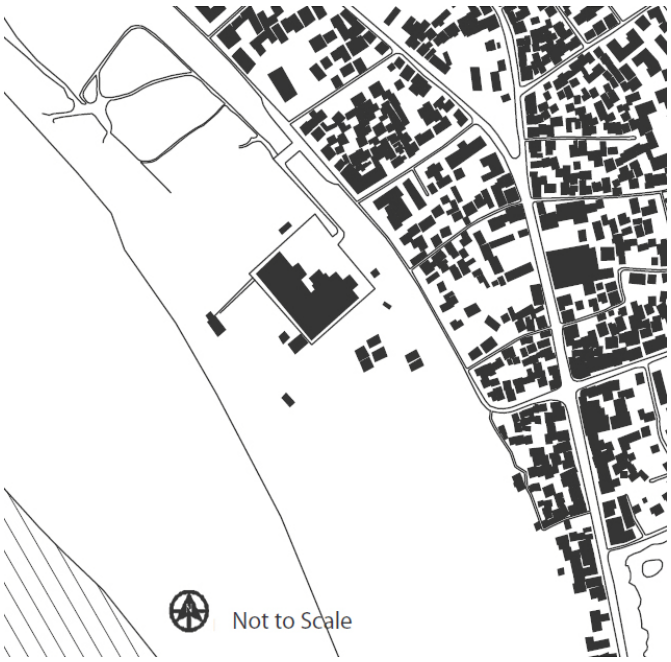
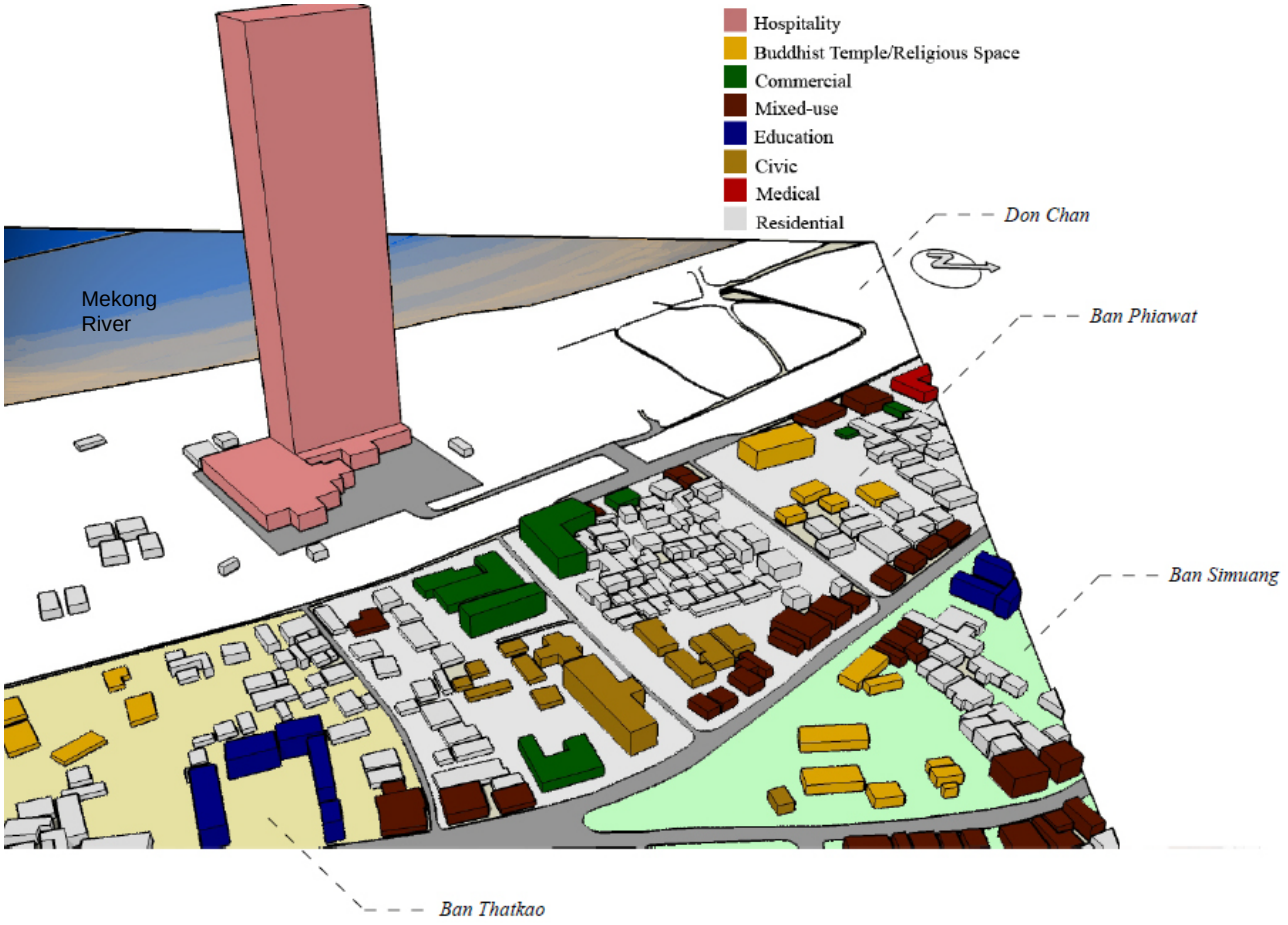



**Figure 3.15**: Existing physical clusters of *ban* in Muang Sisattanak area. *Source*: Sketched by "Siphathay Phanphengdy."



Furthermore, the model that Sichanthala described about the relationship between living and working in agricultural production was based on the traditional way of Lao lifestyle, which applies to most rural areas in the present day. In urban areas on the other hand, the notion of working has shifted from being agricultural-based to commercial, service and tourism oriented. The shift also applies to the social interpretation of the urban district. The Lao population in the urban area now has become much wealthier. This process has made the Lao communities turn its back to the river and agriculture while the Lao government seeks opportunities for urban developments. As a result, the obvious predominant physical structure along the Mekong River is now the Don Chan Palace Hotel, instead of agricultural land. It provided not only job opportunities to the urban villagers and helped transform some of the generic dwellings into a mixed-use building, but it also made a big impact on the environment and the social aspect. Most Lao people that once relied on these floodplains for fisheries and agricultural production as their source of income have now been destroyed.

It is important to note that the characteristic of *baan* developed gradually and reflected the economic expansion. The traditional character that Sichanthala proposed in a *baan* organization can often be found outside of city centers. In contrast, *baan* in the urban areas have a higher density with evolved characteristics that reflect on the service and tourism industry rather than the old traditional lifestyle that involves rice farming and agricultural production. As development on the Don Chan wetlands puts pressure on the community to become more independent from agriculture landscape with more educational, cultural and commercial opportunities, the urban community lifestyle adapted to the changing urban landscape. The analysis of the *baan* and its morphology is an important component in the development of a new urban village in a vulnerable landscape of Don Chan.

## Chapter 4: Analysis and Urban Studies

**Figure 4.0**: Arial view of Vientiane. *Source*: "http://homepage.mac.com/peterlaos/Laos1998/Web5inchphotos/Airial%20view%20of%20Vientiane.JPEG."

*"…a wonder to the eyes. The city and its rivers and mountains incontestably the most beautiful spot in Laos…" by Auguste Pavie*

**Heywood 2006, 29.**

Being only five centuries old, the capital city of Vientiane stands as the administrative capital of Laos and continues to experience in urban growth while the city of Luang Prabang remains as the ancient historic capital of Laos's traditional past. The great cities of Vientiane and Luang Prabang were both established along the Mekong River, which became part of the nature in the city. In addition, the city of Vientiane was developed and shaped through the framework of historical, geographical, and external influential. This chapter commences with a discussion of Lao city transformation from Luang Prabang to Vientiane and their associations to the Mekong River. It also investigates the urban fabric of other water-based cities such as Venice and Ayutthaya in relationship to their rivers.

***The Lao Concept of Bann-Muang System***

In order to understand the organization of Lao cities and villages, it is nescessary to understand the Lao concept of periphery known as the *baan-muang* system. It is broken down into *kueng* or provinces, then *muang* or city, *taseng* or district or sometimes subdivision of district, and *baan* or village *(see figure 4.1).* The concept of *baan* is usually range from 20 up to 200 homes or households and anything less than that is considered as *koum*, which can be described as a district in the English term. However, *koum* can also be used in describing a small group of *muang* depending on the situation. When a *baan* expands, they can establish into a *taseng*, which can refer to a county. Note, the term *baan* and *muang* are widely used today while the term *taseng* is not. Each *baan* however has its own rules of civil conduct where each of them has a leader or chief called *phor baan* or *nai baan*, who is directly responsible for overseeing the whole village.

A *taseng* chief on the other hand can override any decisions by a *baan* leader. Furthermore, the extension of many *taseng* creates a *muang*, which also eventually becomes a *kueng* or province. In addition, *muang* is one of the primary units of social and political organization above the *baan* level. However, *muang* leaders are controlled directly under the provincial leaders, whom oversee everything within its province. The government body of a province is then under the main official administration and government of Laos such as the prime minister and his party of congress. Take Vientiane municipal capital city for instance, it has one main governmental

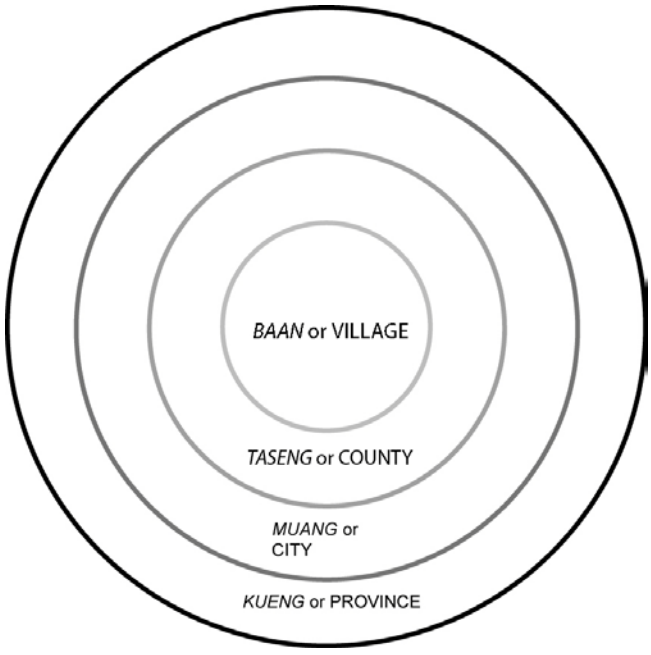



**Figure 4.1**: The concept of *Baan-Muang* system
*Source*: Done by "Siphathay Phanphengdy."

body that controls nine administrative districts or *taseng* and directly over all of *muang*, and *baan* leaders in Vientiane city.

The term *Muang* is a key concept of sociopolitical organization of many parts of Southeast Asia mainland, especially in the areas that associated with the Tai societies. The arrival of the concept *Muang* for Laos was developed by the cooperation of several *baan* in working together in the wet rice agriculture and common water irrigation system.[58] Eventually, the Lao people establish themselves as one unit and worship the same territorial gods and spirits. However, the people were not mainly a group of extended families or have kinship relations, but a combination of extended and other friendly relational groups. Historically, *Muang* refers to a sociopolitical unit that joined by a number of *baan* or village communities with the main economy of rice production with the support of a watercourse. Furthermore, within the concept of today's *baan-muang* system, all *baan* and *muang* provides contribution and pay taxes to the head of the administration, which is the official government.[59]

The concept of *baan-muang* has its origins from the influence of not only Buddhism but also the Indian concepts of *mandala* that refers to the Buddhist or Hindu art as circles and an idea of the cosmos that includes the human body and the state.[60] Originally, the first Lao kingdom of *Lan Xang* was a Buddhist kingdom, which was formed by unifying a number of *muang* organized according to the *mandala* state model. The kingdom was fragmented into tributary units of *muangs* surrounding a central power. Each *muang* had a potential for expansion and function as a source of power under the greater *muang*. For instance, the *Lan Xang* Kingdom once became part of the Siamese hegemony in which they had to pay tribute and respect to the greater *muang* of Siam. It was not until the French seized Lao territories using the Mekong River as the border between Laos and Thailand. Nonetheless, the concept of *baan-muang* and its influence of the *mandala* became not only a model for the Lao communities, but also for other kingdoms like Siam, Ayutthaya and *Lan Na*.

---

[58] Savada, Andrea Matles, ed. *Laos: A Country Study*. Washington: GPO for the Library of Congress, 1994. http://countrystudies.us/laos/ (Accessed August 20, 2009).
[59] Sichanthala 1996-97, 33-34.
[60] Evans 2002, 6-7.

***City Transformation: From Luang Prabang to Vientiane***

**Figure 4.2**: Arial view showing the meeting point of the Mekong and Nam Khan rivers in the city of Luang Prabang. *Source*: "Heywood 2006, 2-3."

Centuries ago, before the rise of Vientiane city, *Luang Prabang* was the former capital city of the *Lan Xang* Kingdom, which was established along the Mekong River with its tributaries of natural channels such as the Nam Khan and Hual Hop, which surrounded by hills and mountains. Luang Prabang is a city that consists of royal complexes with Buddhist temples and monasteries along riverbanks with a large number of green space, ponds and natural landmarks. The relationship between the rivers and the city has always been interlinked to one another. Mekong River and its tributaries for example is the most important component that gave rise to the kingdom of *Lan Xang*. The riverbanks are enriched with nutrients from the river and resulted rich fertile floodplains that provided abundant agricultural crops and rice cultivation. As a result, extensive agricultural goods and rice fields on both sides of the riverbanks supported the kingdom and its large population. The river also provided water and source of protein from animals and fisheries for the Lao communities in Luang Prabang. Furthermore, it also became a transportation and trading route, which helped link the city to other civilizations in the region. In fact, the environmental characteristic of the river network was an important crossroad between

Siam, Vietnam and China. The plan of Luang Prabang sits motionless between the Mekong River and the Nam Khan channel, which is a kilometer long peninsula formed by a curve. Within the heart of the peninsula stands a 60-meter hill known as mount Phousi dominating the town skyline. A natural symbolic landmark offers a natural panorama of the vast mountains rising out of the rivers. Instead of a city in a radial plan similar to Angkor with its main imperial power in the center while the population locates at the perimeter, Luang Prabang is oriented in a linear pattern along the riverbanks. The linkage of small communities of dwellings that each centered around a Buddhist temple became the layout organization. Instead of a main central municipal government, the Lao villages within each town set their own rules of civil conduct. On the other hand, in the time of crisis such as wars, flooding and food shortages, the villages would come together to act as one.

In the present day, the existing plan of Luang Prabang city is a result of a combination of Lao and French urban pattern. During the $19^{th}$ - $20^{th}$ century, the city of Luang Prabang acquired some of characteristics of an urban center with the influence of the French during their occupation. Complementing to the existing town and its relationship to the rivers, road network systems with public buildings, schools and markets began to emerge. It is the fusion of traditional architecture and Lao urban structures including Lao vernacular and French colonial buildings. However, the influence of the French did not fully replace the traditional mode of setting typical of the Laotian village along the Mekong but rather integrated pleasantly in which have made Luang Prabang city become unique in character. Even until today, the urban planning of the city remains as it was three centuries ago. The well-reserved townscape and its urban layout demonstrate the main ingredient in the blending of these two distinct cultural traditions. In terms of the urban fabric, Luang Prabang still contains many residential dwellings that illustrate more as Lao village neighborhoods than as an urban city. Furthermore, the street network system was the same as it was in the $14^{th}$ century. Most of the longer pathways, which used to be footpaths and later got integrated into roadways, are parallel to the river. The shorter paths on the other hand intersect the larger roads leading to the riverbanks. These short streets also serve as the division between different villages and neighborhoods.

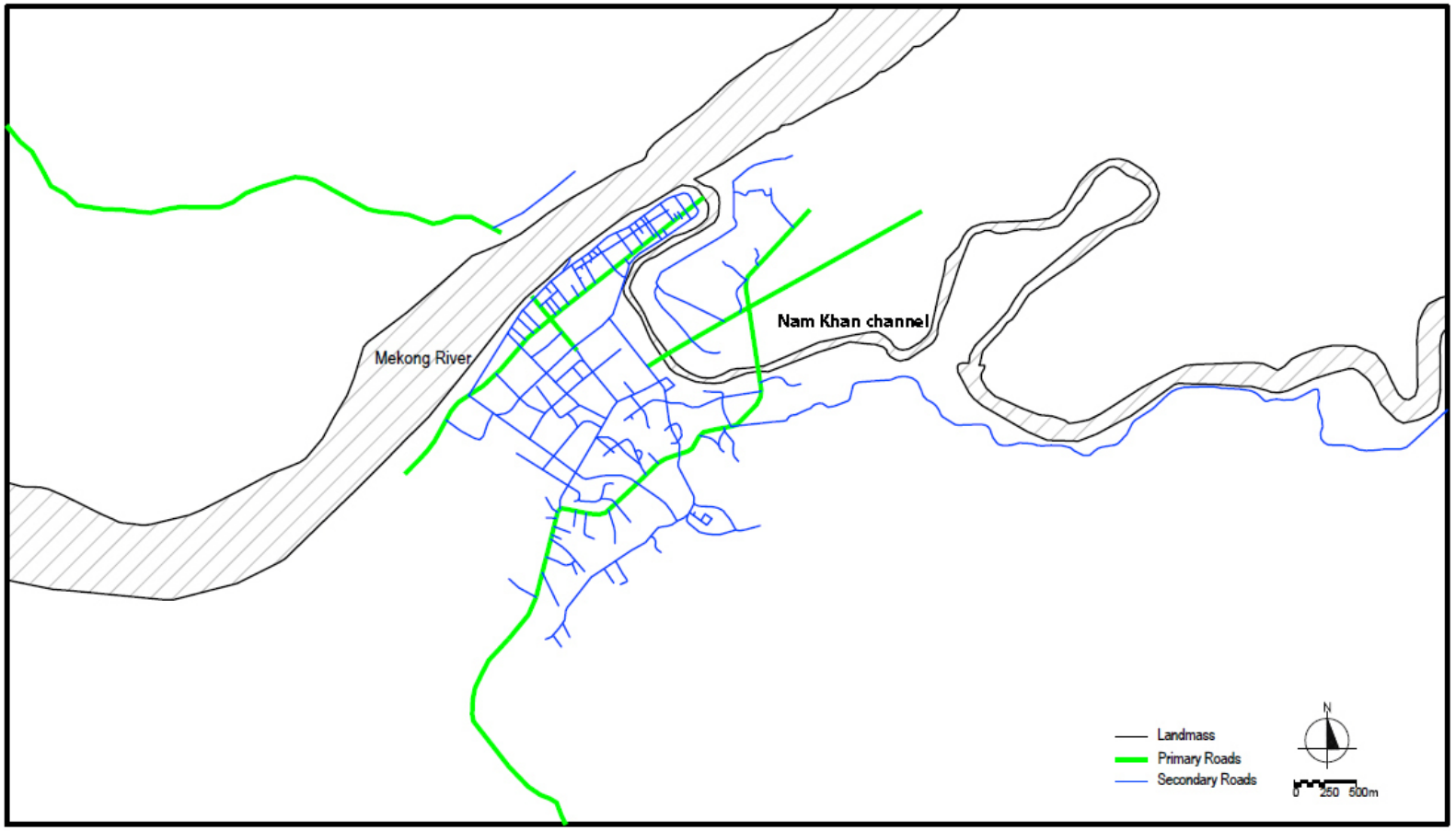



**Figure 4.3**: Road network system in Luang Prabang city.

*Source*: Done by "Siphathay Phanphengdy."

Not until the 16th century, the capital was relocated to Vientiane, which is the present day capital of Laos. At the time, Lao villages were scattered in groups with vast agricultural land along the riverbanks of Mekong River. Similar to Luang Prabang, the lifestyle for the people in Vientiane revolved around the river making it an important component in sustaining the communities. Furthermore, during the time of the *Lan Xang* Kingdom of Vientiane, Lao people occupied the two shores, which became Northeastern part of Thailand today.[61] Many of them resided on the shore on both sides producing agriculture and rice cultivations. Some lived on one side and do agricultural work on the other side. Traveling back and forth by boats to work and trade was their daily lifestyle. However, when the Siamese invaded Vientiane destroying the city, many of the population were relocated to Bangkok. Furthermore, as the French agreed with Siam using the Mekong River as the borderline between Laos and Thailand during the colonial period, it changed the lifestyle along the two shores. The land division separated the two shores into national boundaries. However, the lifestyle of the population on both Thai and Lao did not change dramatically. The population was still farmers and agricultural groups. Trading across the border however became a little difficult, but people still traded. They traded goods such as rice, sugar and silk using the river as a trading route network *(see figure 4.4)*. Furthermore, traders from Luang Prabang and other cities along the Mekong delta also used the river as their main trading routes. The convenience and successful of trading up and down the river, and across the border has transformed Vientiane city to become the dominant province in Laos.

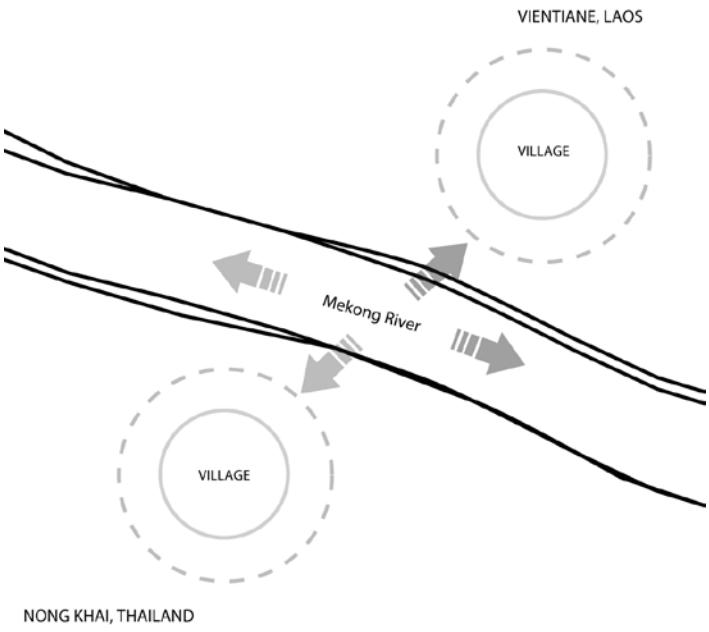


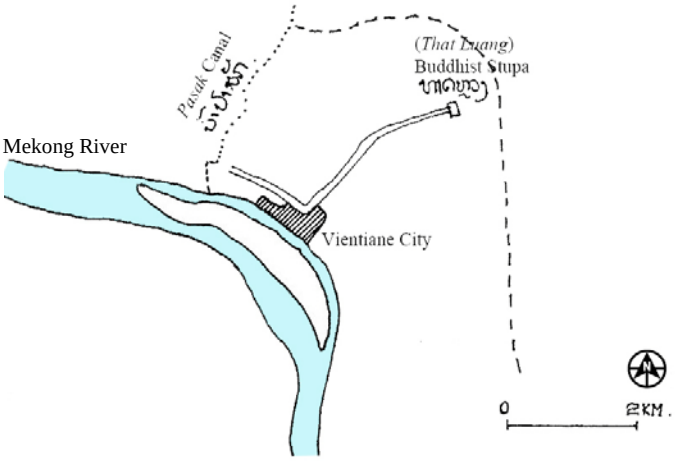

**Figure 4.4**: The Mekong River became the dominant trading route in Vientiane.
*Source*: Done by "Siphathay Phanphengdy."

[61] Sichanthala 1996-97, 31.

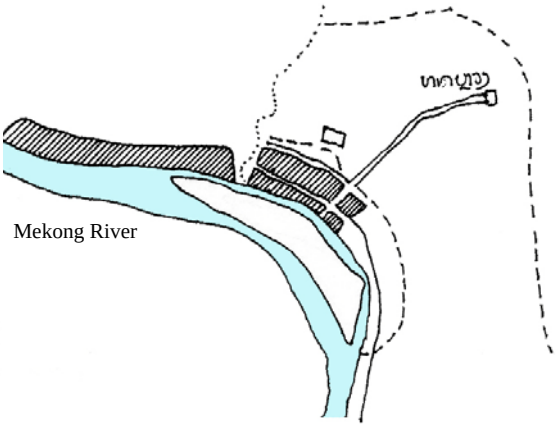
The first tip of the dramatic change of the city of Vientiane started to emerge after the French colonization followed by the New Economic Mechanism program in the early 1990s. The contribution and influence from the French has helped restore the city of Vientiane after it was invaded by Siam. The original settlement of Vientiane had undergone some vast changes from the time it was the major settlements on the north side of the river across distance from the golden Buddhist stupa of *That Luang*, which is a national symbol that had been reconstructed several times due to foreign invasions. In the original settlement, it was consists of small group of dwellings clustered together around Buddhist temples and palaces along the Mekong River. As the city extension stretched outward along the Mekong, it opened up areas on the periphery for further village developments and residential expansion. First, it expanded westward occupying most of the Mekong deltas then it developed towards the north around the stupa of *That Luang*. By the 1960s after years of independence from the French occupation, the city developed further towards the north away from the river occupying most of the flat plains. As the city gets denser in the north of the river, people started to move southward along the Mekong making Vientiane city become even greater in scale *(see figure 4.5-4.6)*. The Lao people who lived along the riverbanks continued to use the river as part of their everyday lives while city dwellers began to seek opportunities towards the commercial, services and tourism industries.

By the 1990s, the rapid economic and population growth throughout the city was transforming the spatial arrangements from an agricultural based into a dense industrial and services based society. The influence of consumerism has also changed the lifestyle of the Lao people in Vientiane. More and more population started to shift away from agricultural production along the river deltas to work in the business and tourism industry in the inner city contributing to high population density. Some agricultural land along the Mekong has also been replaced by large commercial ports, which also contributed to the economic and population growth. Ever since Laos opened its door to the rest of the world, it attracted many foreign investments and tourists. As numbers of tourist increased, businesses began to rise spurring economic growth. Moreover, since the influence of roadways and introduction of automobiles, Vientiane has relied heavily on vehicles and motorcycles than by foot and waterways. As a result, the road network system has become the dominant and transportation routes.

Vientiane city in 1917




Vientiane city in 1930




Vientiane city in 1953

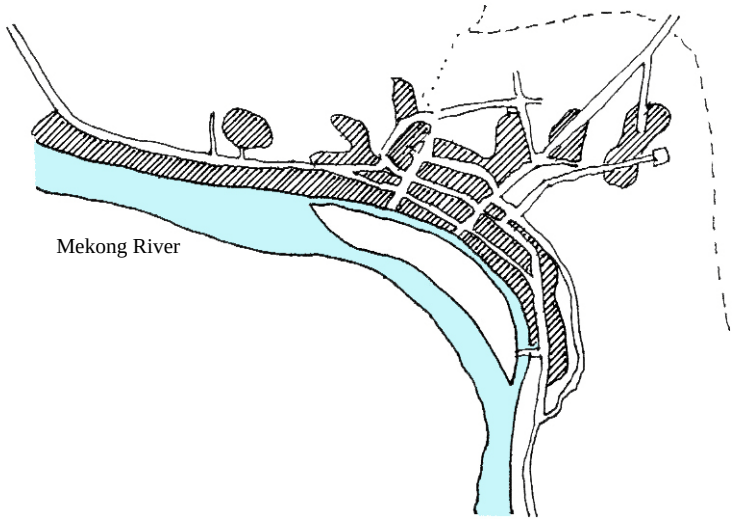
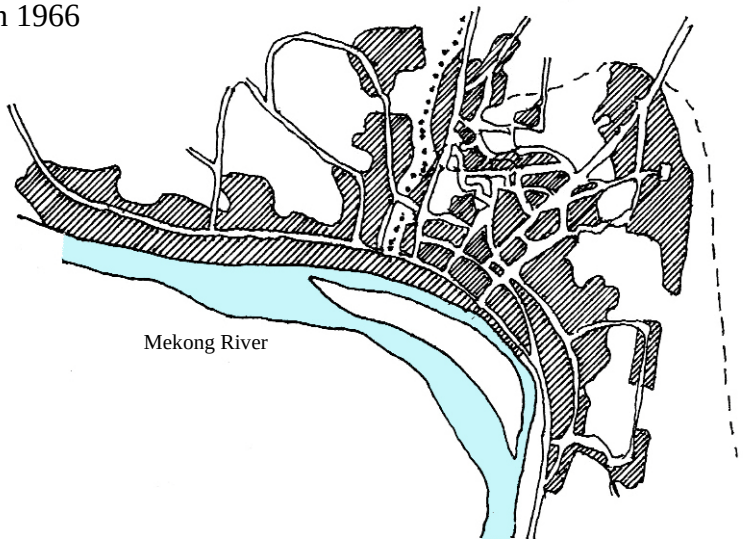



**Figure 4.5**: Transformation of the capital city of Vientiane from 1917-1953.
*Source*: Modified from "Sichanthala 1996-1997, 14-15."

Vientiane city in 1966




Vientiane city in 1973

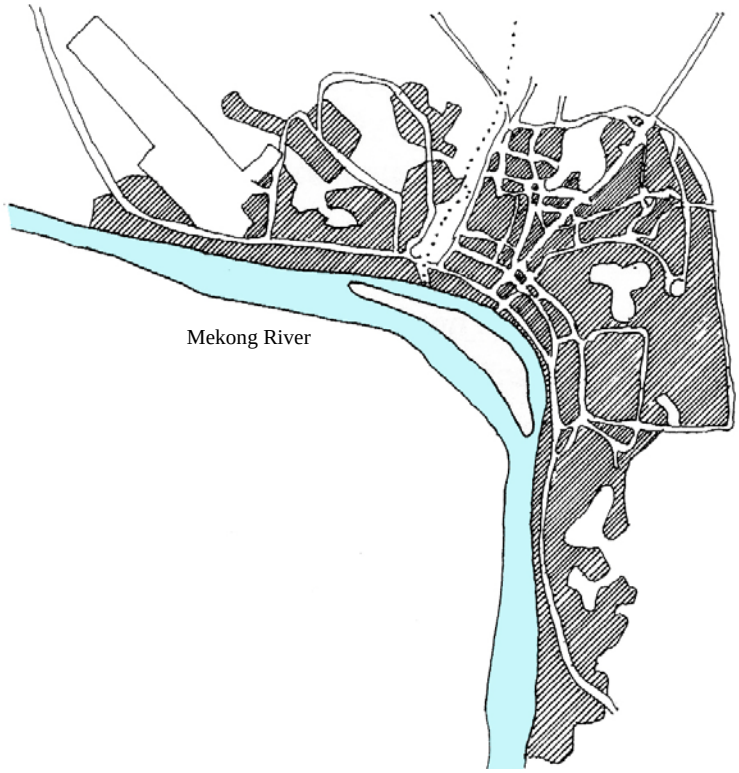
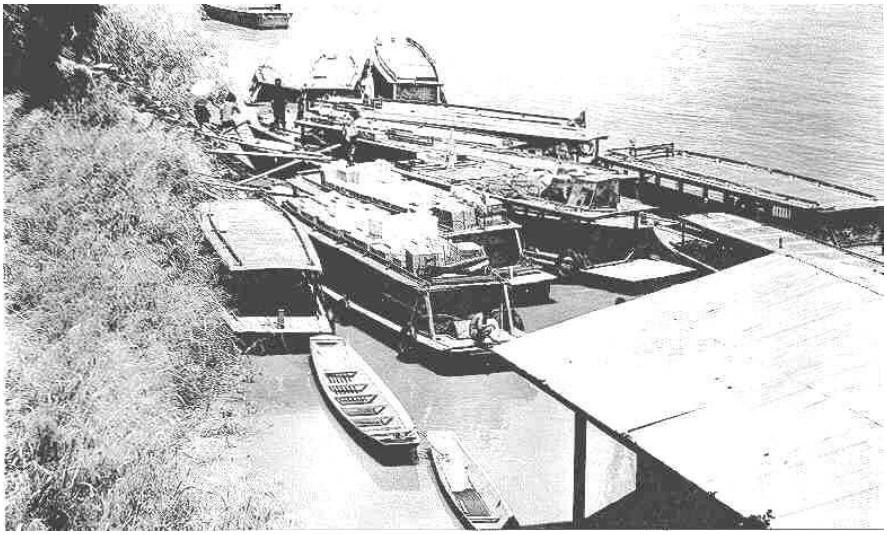



**Figure 4.6**: Transformation of the capital city of Vientiane from 1966-1973.
*Source*: Modified from "Sichanthala 1996-1997, 15-16."

The fluidity of Lao cultures has never stopped adapting, changing and evolving. Its adaptation to the Mekong River has led to its first establishment of a Lao civilization of *Lan Xang* Kingdom in Luang Prabang city. When the kingdom headquarters were moved southward, the kingdom capital resettled along the Mekong River near the present day boundary of Laos and Thailand. Historically, other Southeast Asian kingdoms such as the Siamese, Khmer, and Burmese influenced *Lan Xang*. A combination of cultural influences came from traders, travelers and invaders. The kingdom blended all these emerging influences together while adapting to its own culture. The daily lifestyle still revolved around the Mekong River where most of the Lao people commuted by feet and some by boats. However, it did not make a significant impact until the 19th century during the French colonization. Industrialization was introduced, which was the start of the dramatic change of Lao culture. As the French influence of road network systems made an impact on Lao cities, boat commuters and the culture of waterway networks began to shift slowly into land transportation. Water has always been the power influence of the Lao culture. The relationship between man and water was dialectical where water shaped man, and man shaped water. This relationship stems from the unique characteristic of geography, climate, culture, people and lifestyle.

**Figure 4.7**: Boats along the Mekong River in Laos. *Source: http://www.83rdrrsou.org/7thrrfs_pictures/wheatley_bob_1967_1968/udorn_67_68/wheatley_udorn_67_68_19.jpg*



Situating along the Mekong River across from Thailand, the municipal capital of Vientiane has become a place for foreign investments and modernization. In the context of urbanization, it is the most developed and urbanized city in Laos today. There are other urban cities such as Pakse in the south and Luang Prabang city in the north, but they seem to become more of resistant to urbanization and modernization. In 2007, M. Askew, Colin Long and William Logan published a book called "Vientiane: Transformation of a Lao Landscape" in which they argued that the administrative capital of Laos, Vientiane is "developed as a utilitarian centre of modernity" while the ancient Lao capital of Luang Prabang maintains as an "exemplary centre representing the Lao traditional past."[62] The development and landscape of Vientiane in both physical and imaginary are a reflection of key features of Lao geography and political history. The natural urbanism and its critical relation to constructions of Lao identity in the contemporary period in Vientiane are less traditionally affected than Luang Prabang is.

As a result, modernity and urbanization are affecting the city of Vientiane. Furthermore, the limitations on how urbanism affects the capital of Vientiane with the history of the transformation of the city with culture and traditions to a modern state are both organized in a context of historical and geographical. [63] Since Laos situated in the middle of the Southeast Asian mainland region as a land link country in the center of Indochina, it was an easy geographical target for external influences. For example, many influences came across the border from Thailand including architectural of Thai influence to technology and modern ideas. To the north is China while Vietnam sits on the eastern boarder, the influence of communist ideas have become embedded into the Lao societies.

Furthermore, the changing pattern in Vientiane's history symbolizes the key transformations of the political and economic processes influencing the people of Laos. There was little notification of urbanization in Laos until the present day because Laos continues to be described as a rural remote country that is insignificant to the vibrant trends affecting most of the Southeast Asian mainland.[64] The country is a tiny landlocked backwater, with no significant

[62] Askew 2007, 205.
[63] Ibid., 1-15.
[64] Ibid., 3.

urban present or past. Vientiane in its various forms is transforming due to the experience from its history resulting from geo-politics dating from the pre-colonial period and extending into the post-colonial period. The revival of Vientiane in the 20th century was not due by the Laotians historically, but by French colonization, and the whole layout of French Vientiane, its principal axes, its key monuments with the urban symbolism, was not French but Lao.[65] Together with the architectonic style of many official and administrative buildings and the urban design of its center are the leftovers from the result of the revival of the city by the French. However, Askew concludes that the layout and planning of the city was established by the earlier Lao city that was destroyed by the Siamese.[66] Before the destruction of Vientiane city, it was a Lao city with defined form in which was rebuilt upon the existing figuration and organization by the French.

There is no doubt that the appearance of Vientiane city has changed. Vientiane today is very different to what it was fifty years ago. Vientiane has now become the Lao culture region lay in the planning, architecture, and art of the city with modern ideas and international influences. It is not only the center of culture, but also commerce and administration in Laos. Additionally, the distinction on how Vientiane became a modern state is clearly influence by external forces. However, it also seems evidently that other cities in Laos are also experiencing urbanization and modernization in a negative notation. For instance, an ancient capital of the Lao Kingdom, Luang Prabang, located in the mid-northern of Laos, is experiencing urbanization and modernization with the help of tourism industry. The city becomes inscribed on UNESCO's World Heritage list because of its outstanding cultural value to humanity and was adopted by the Convention concerning the Protection of the World Cultural and Natural Heritage.[67] The ancient evidence in the city can be seen in both from pre-colonial period and post-colonial period. The combination and the essence of rich heritage of Laotian culture and French culture is the key component that makes the city unique and exclusive. In comparison, the administrative capital of Vientiane is "less a reflection of the religious fervour or artistic sensibility of the inhabitants" than Luang Prabang.[68] Luang Prabang is a city with historical palaces, Buddhist temples and

---

[65] Ibid., xxi-xix.
[66] Ibid., 16.
[67] Luang Prabang: an architecture journey 2004, 1-6.
[68] Smithies 1974, 101.

colonial influences with easygoing way of life and its noble simplicity. In today's current situation of historical preservation however, the city of *Luang Prabang* is being destroyed by urbanization and modernization with the help of tourism. The city is a fragile treasure with rich heritage and culture that greatly represent Lao identity. The communities in Luang Prabang today are separated into two distinct groups. They include the people who want to carry on living peacefully in their traditional Lao way of life, and the people who are profiting from tourism windfall.[69] This pattern of tourism endangers the character, soul, and serenity of Luang Prabang. As a result, it appears that the city of Luang Prabang is rather less appropriate for modernization and urbanization than the city of Vientiane.

In the context of urban growth in Vientiane city, the increase of population and the development of technology have extensively influenced the built environment and the urban landscape as more and more population are now living in the inner city centers such as the Lao national capital of Vientiane. According to Brinkoff, the metropolitan city of Vientiane has increased dramatically from 1995 to 2005 *(see figure 4.7).*[70] Furthermore, the old model of settlements that once facilitated an ease of living, working, playing and learning have given way to more complex frameworks that places towns and cities within hierarchies of urban conurbation to cater for continued urban growth. Geography largely determined settlement patterns in Vientiane, often along the Mekong River valleys, which provided the main, and often the sole means of routes and communication. It was the center of social life with palaces, Buddhist temples, villages and colonial structures forming the more imposing additions to the capital of state while dwellings and agricultural landscape forming concentric rings of development respectively. However, despite the urban growth, the capital of Vientiane is still a young city in which the urbanization trends seem to be slow compare to other Southeast Asian cities.

---

[69] Askew 2007, 6.

[70] Brinkhoff, Thomas. City Population. 2009. http://www.citypopulation.de (Accessed August 20, 2009).

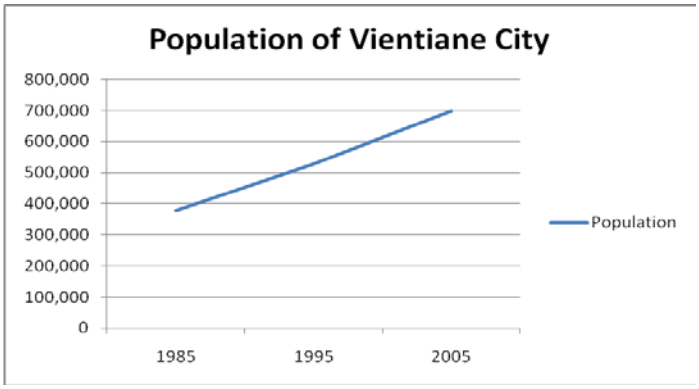



**Figure 4.8**: Population of Vientiane City. *Source*: Data from "Brinkhoff, Thomas. City Population. 2009."

Cities, towns and villages vary in size and scale, population, density and wealth. In spite of their geographical and social attributes that contribute to their character, the great cities of the world have distinct physical characteristics that make them unique and successful in transforming into urban terms, and memorable places that people will return repeatedly. One noticeable attribute is their geography and its relationship to a body of water including the ocean, rivers and lakes. Water is one important component that makes a great city. In New York for instance, the size and location of the Central Park in relationship to a rectilinear grid form along the Hudson River and the Atlantic Ocean provides a physical and social break between nature and the built environment. In Rome, the roads and its interrelationship with the major open spaces with the Tiber River on the Italian Peninsula provide an ease of movement as well as a means for social interaction. The network of urban grid in Portland provides both an adaptable and walk-able city that is noticeably complemented by the Willamette River. Furthermore, the position of the diagonal cities such as the city of Barcelona on the northeast coast of the Iberian Peninsula proves useful in terms of its ability to break the rigidity of the grid as well as create better connectivity with the Mediterranean Sea *(see figure 4.8).* As a result, these cities are water-oriented like Vientiane city. The water and its interrelationship with the city illustrate how important a body of water is for a city to develop. Their interaction creates a sense of place and a sense of balance between nature and the built environment.

In physical terms, the city of Vientiane may not be comparable in size and scale to some of these great cities of the world. However, it presented important concepts that gave clues of how the city, the network system and its relationship to the river work differently in Vientiane.

The city itself did not fully adopt the urban grid system that works like the great cities in which the urban organization pattern appears to be organic in a way that the road network system interconnects one another and parallels to the Mekong River like the city of Luang Prabang except much denser. In figure 4.9 for instance, the road network system of Vientiane city is consisting of various primary roads and multiple secondary roads. These multiple segments of complexities are organized along the Mekong River. It appears that the primary roads almost mimic the Mekong River while branching outward to the north and south that connects to other cities and provinces. In addition, these major roads are fragmented and interconnected with secondary roads. The complexity of these secondary roads then generates the urban fabric of the city creating spatial pockets for different functions. With rapid development of urbanization and motorization today, the challenge of traffic and density becomes increasingly conspicuous.

Consequently, Vientiane city's fabric seems to organically appear in away that responds to the Mekong River. Its character has grown over centuries and developed characters that some say that were sometimes planned, and sometimes by accident. Unlike the great cities around the world, the distinct physical characteristic of Vientiane centers in its natural setting and the adaptation to its existing landscape and prominently to the Mekong River. The city is covered in layers in which underneath the urban fabric lays the French influence, and below that lays the early Lao settlements. The early Lao settlements were organized along the Mekong basin, which reflects the relationship of the river, the landscape and adaptations to their daily lifestyle activities with the urban fabric and the road network system.

**Figure 4.9**: Urban scale and fabric comparison to the Great Cities.
*Source*: Done by "Siphathay Phanphengdy."

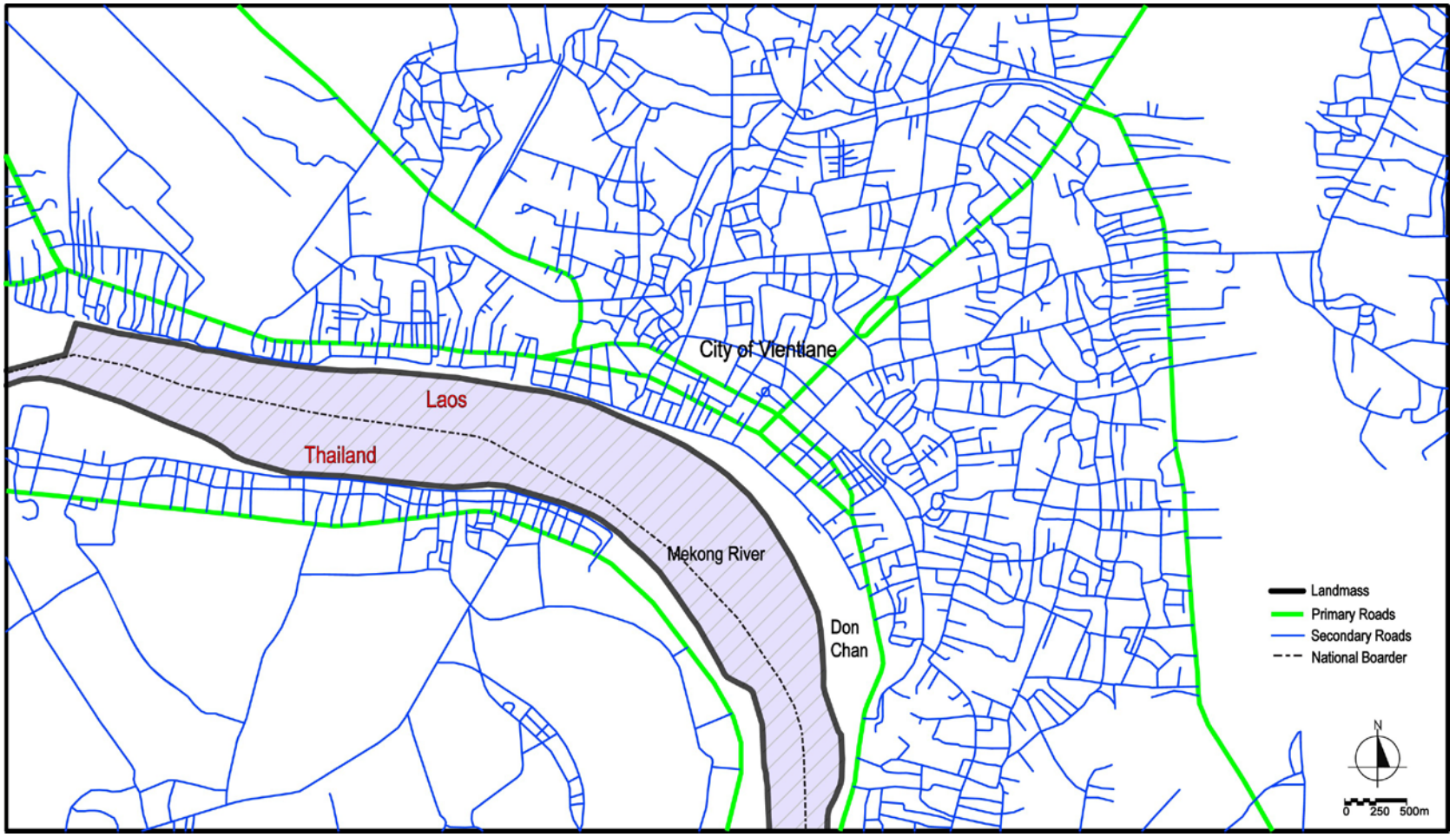



**Figure 4.10**: Road network system of Vientiane city.
*Source*: Done by "Siphathay Phanphengdy."

***Case Studies of Water-oriented Cities***

The city of Vientiane may be considered as a waterborne or water-oriented city. Its early settlements and origins were based on rivers, particularly the Mekong River and its tributaries of natural channels that creates floodplains and wetlands. Rather than tackling this project right a way, it is vital to have a glance at other waterborne cities in terms of their history of developments, urban forms, its relationship of water and land, and current situations on the physical elments, and city problems. It would be exciting to discuss and compare Venice and Ayutthaya briefly, in order to contrast their characteristics. These two case studies would give valuable references for further development of this project, which focuses on the renewal of self-sustain water-land community in the municipal city of Vientiane.

*Ayudhya (Ayutthaya) in Thailand*

The former capital city of Siam Kingdom, Ayudhya was founded in 1351 and surrounded by three sides of an ox-bow of the Lopburi River, which was dug from a 3.5 km canal and transformed the city into an island.[71] The city was described as "Venice of the East" during the 16th century by the European who perceived it as another waterborne civilization similar to the one from the west. The difference was that men made Venice of the west while Ahyudhya was the mixture of men and nature. Furthermore, Ayudhya's plan was not static, "the city was constantly restructuring itself, the changing pattern was caused mainly by new canals being dug to replace older ones which had either been perpendicular to the natural direction of flow of haphazardly planned and whch frequently became silted."[72] As a result, the final reconstruction of the city does not represent any particular time period, but instead as the sum total of all buildings, canals, and streets that had collected over many centuries. Ayudhya was a city that had 100 of city gates with 22 more in the Royal Palace including both ground gates and water gates. These 56.4 km long cannals of the city had 28 permanent high brick bridges with arches that spanned them.[73] The network of these canal systems was 140 km long.

[71] Jumsai 1988, 162.
[72] Ibid., 162.
[73] Ibid., 162.

**Figure 4.11**: Dutch oil painting of panorama of Ayudhya in 1650. *Source*: "Jumsai 1988, 79"

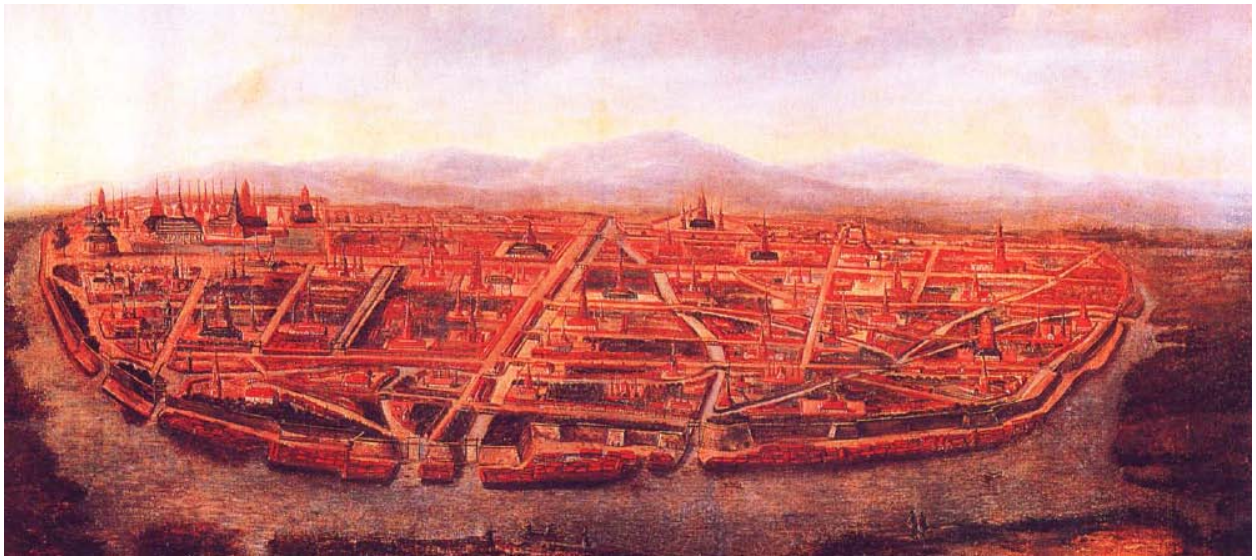
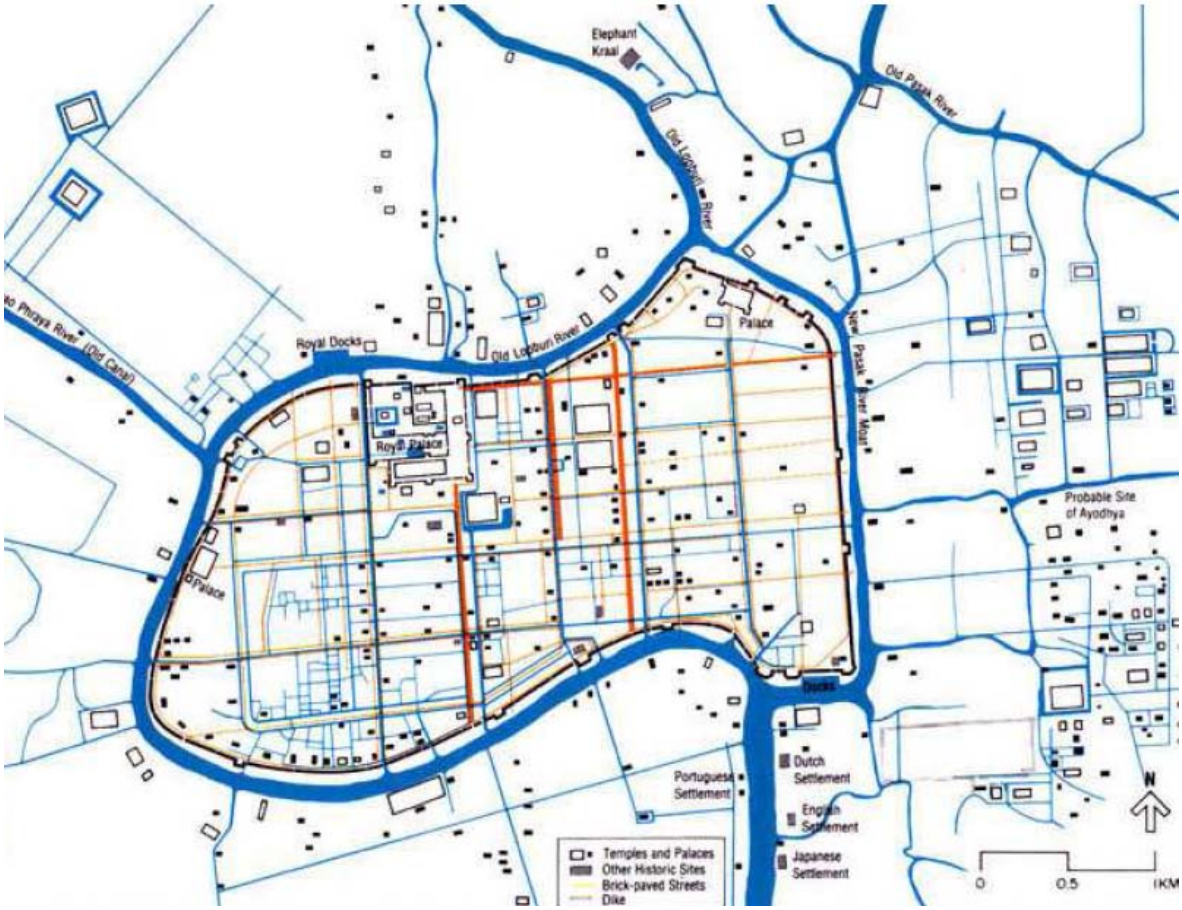


**Figure 4.12**: Reconstructed plan of Ayudhya. *Source*: "Jumsai 1988, 79"



In addition, the canals of Ayudhya had no hydraulic implications except the lower dams at the water gates to maintain water during the dry season.[74] During the wet season on the other hand, the city became submerged while the water passes the canal capicity margin making it easy waterways for boat traffic. At the same time, the annual flood was not an issue for their homes and dwellings because they were built on stilts. Furthermore, some of these canals were also constructed to connect the city to other rivers such as the Chao Phraya and the Pasak River. As the river were diverted making Ayudhya the confluence, the city then expanded its control over a vast production of food as well as controlling northern city states, the southern peninsula and trading network between India and Japan.[75]

Orientation near rivers and water network system was an important component for Ayudhya. According to S. V. Beek, a writer and aurthor of "The Chao Phya River in Transition, Ayudhya's main economy was founded on wetland, transplanted rice nourished by the river, a rice specie that originally grew wild in Mekong River basins.[76] Like the Mekong in Laos, the Chao Phraya River as a tributary of the Mekong fertile soil to ensure high yields to sustain Ayudhya and enough surpluses for its exports. As a result, the river served not only rich product of rice cultivation, but also as transportation waterways and highways to oversea markets. Similar to the city of Luang Prabang and Vientiane, the royal palaces in Ayudhya were situated near the water or river away from the geographical center. Furthermore, rather than one single prominent architectural structure in the center like in Angkor of Cambodia, the city was filled with *chedi*, Thai or Ceylonese-style pagoda, scattering in and around the city.[77] Situating the city surrounded by water and canals with controlled gound and water gates was also a strategy during invasions. For instance, five out of six Burmese sieges during 1549-1592 had to be withdrawn due to the floods.[78]

---

[74] Ibid., 162.
[75] Ibid., 164.
[76] Beek 1995, 31.
[77] Jumsai 1988, 165.
[78] Ibid., 165.

By the end of the 15th century, the Siamese began numerous canal excavations, which have made the region reveal numerous canals indicating Siamese men creation, not nature's creation. Consequently, the Chao Phraya River were modified by the Siamese engineers by the 16th century.[79] They dug the canal in the main river to serve three purposes:

1. Network of canal system around the city to served as city moats to bar invaders
2. The canals served as a linkage between other rivers
3. Created short cuts and reduce travel distances

Reducing traveling and transportation distances from the capital to the sea became the main focus as international trade increased. Since they were unable to admit deeper draught ships in the city, they realized they could speed the journey north by dredging canals in the winding portions of the lower river.[80] As a result, they created six short canals as long as 62.3 km between the city to the Gulf of Thailand from 1538-1722 *(figure 4.12)*. These networks of canal system allowed the passage of ships to travel shorter distances in less amount of time.

During the extensive construction of the canals, the French helped build a large fortification system in the star shape or Vauban style in the north of Ayudhya.[81] By the 17th century, the first master plan of the city was completely surrounded by Vauban walls *(figure 4.13)*. The canal network system was dredged around the city barracks. It

**Figure 4.13**: The six canals of *khlong lat* or canals of the Chao Phraya.
*Source*: "Beek 1995, 39"


[79] Beek 1995, 38.
[80] Ibid., 39.
[81] Jumsai 1988, 165.

was described as an encroaching spiderweb, which provided forward fireing positions and routes for logistic support for their army.[82]

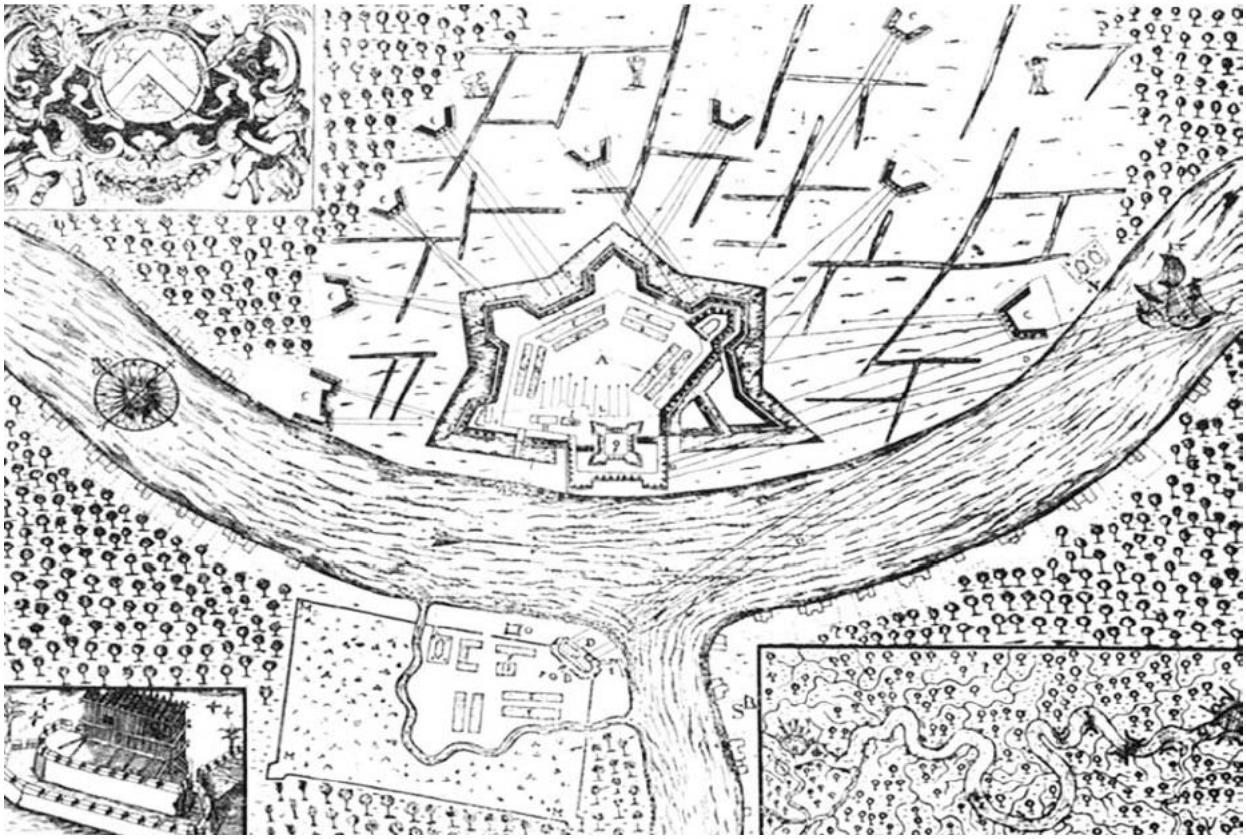


**Figure 4.14**: A late 17th century plan of Bangkok by the French. *Source*: "Jumsai 1988, 167"

By 1782 during the founding of a new dysnasty, the king moved his capital across the opposite side of the Chao Phraya River, which stood the original walled town of Bangkok that was built earlier to guard a by-pass canal in an oxbow of the river.[83] The moved of the capital city resembled the time when the city of Ayudhya was founded. The idea was to have the city near the river so that the kingdom would have natural channels and extra wide moats to the north, south, west and east, which was marshland that already strategically in a good defensive orientation against the Burmese. Furthermore, the new capital of Bangkok was an attempt to

[82] Ibid., 165.
[83] Ibid., 166.

recreate the majesty of Ayudhya after its campaign against the French and attacks by the Burmese.

Similar to the plan of Ayudhya, Bangkok was also designed with no prominent center, as Jumsai called it as the anti-city element.[84] The royal palaces were located near the Cha Phraya River while functioning in the heart of the city were an empty space that numerous activities would take place at. For the Siamese, the city center was in their mind, instead of a physical center. In this case, the Lao communities of Luang Prabang and Vientiane felt the same. Their cities were designed and laid out similarly to the Siamese, except with the extensive network of canals that connects to the open sea.

By the 19th century, the city of Bangkok was expanded creating more moats and canals linking the rest of the city's water network *(figure 4.14).*[85] The city became occupied by extensive systems of canal networks in which the population were not mainly concentrated in the city, but in the Chao Phraya River itself. Bangkok was described as a floating city that the European once perceived it as "Venice of the East". As the canals were integrated into the planning system, it was used as a tool to define the boundaries of land-use zones. Bangkok was fragmented into three sections by the canals including the inner Bangkok, outer Bangkok and the area outside the city wall.[86] The inner part was consisted of temples, public squares, institutional buildings and the royal residences. The outer on the other hand was refered to residential area for the former city moat canal to the city wall, which contained residences of court officials, foreigners and general residential area. As for the areas beyond the city wall included a large plains of groves and trees *(figure 4.16, 4.17).* In this early Bangkok phase between 1782-1851, the network of canal systemms were purposely built for defense purposes, but also served as the main trasportation and communication routes.[87]

By 1851-1925, the capital of Bangkok came under western influence with modernization and ground-based road network systems. Being a water-based transport

---

[84] Ibid., 168.
[85] Ibid., 168.
[86] Saksri 1991, 25.
[87] Ibid, 26.

civilization as perceived by the European, Bangkok was shifted to land-based transport due to western influence.[88] During that time, the waterways were still common for the transportation mainstream. It also influence the street patterns in which the roads were built along the main canals. However, as more and more road network system with the rapid population growth, the importance of the canals and waterways srarted to diminished *(figure 4.18, 4.19)*. The residences and commercial settlements then began to increase along the roads and streets.

From 1925 onward, Bangkok was influence by not only westernization but also new transportation technologies such as the automobile. By this period, many canals were replaced by street systems while there was no further canal construction since 1910.[89] Furthermore, as the city developed, the number of roads has increased while the canals declined. Ever since Bangkok have developed rapidly with increase of population, the urban layout of the city began to transform the canals into public spaces and urban parks *(figure 4.20, 4.21)*.

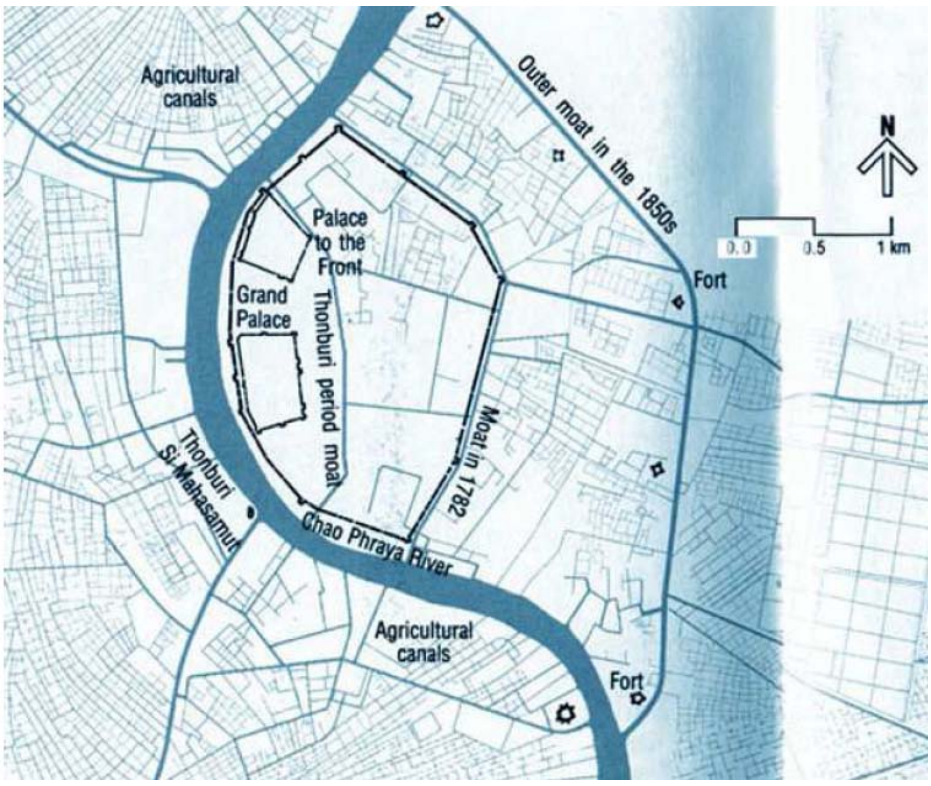



**Figure 4.15**: Plan of Bangkok in the last century. *Source*: "Jumsai 1988, 168"

[88] Ibid., 28.
[89] Ibid., 33.

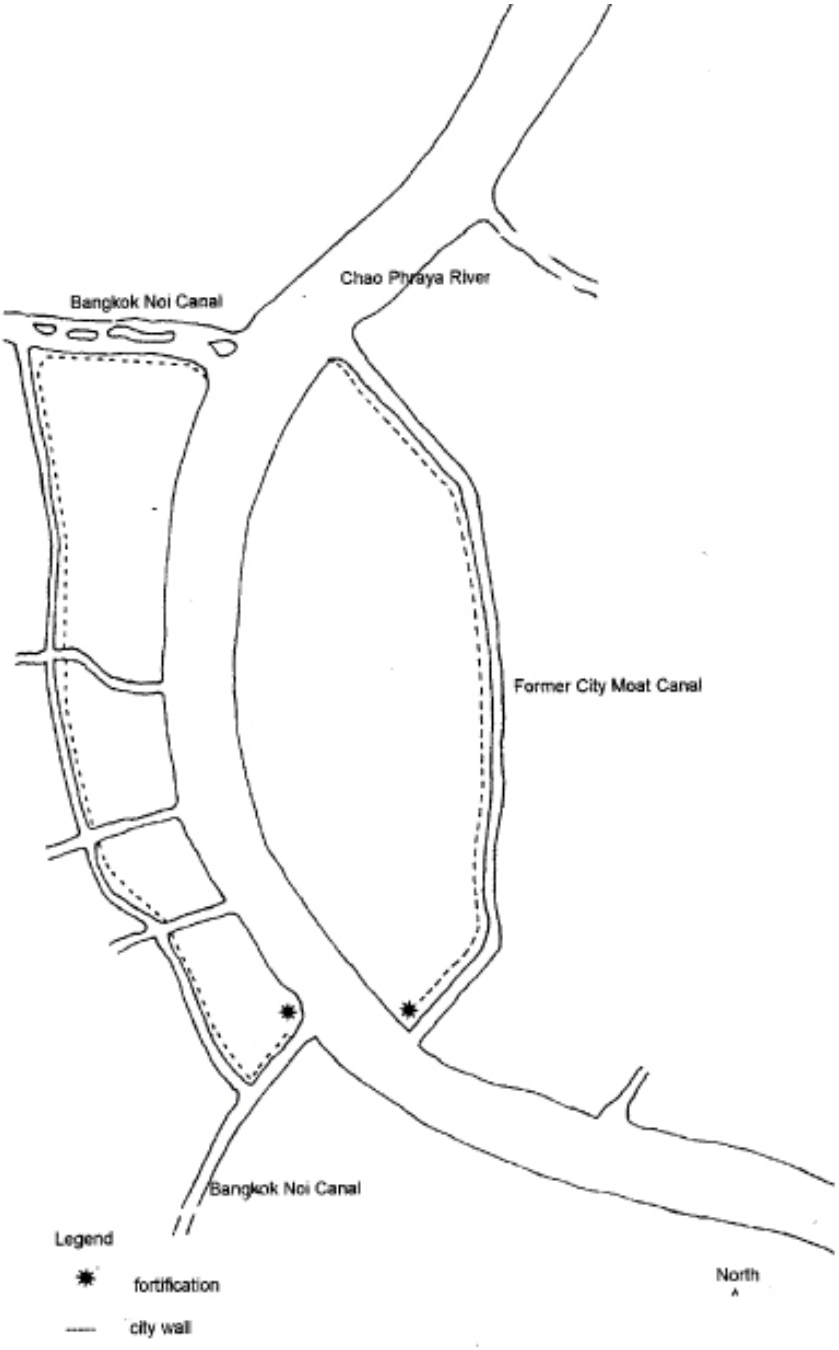



**Figure 4.16**: Eastern bank of the Chao Phraya River prior to 1782.
*Source*: "Saksri 1991, 23"

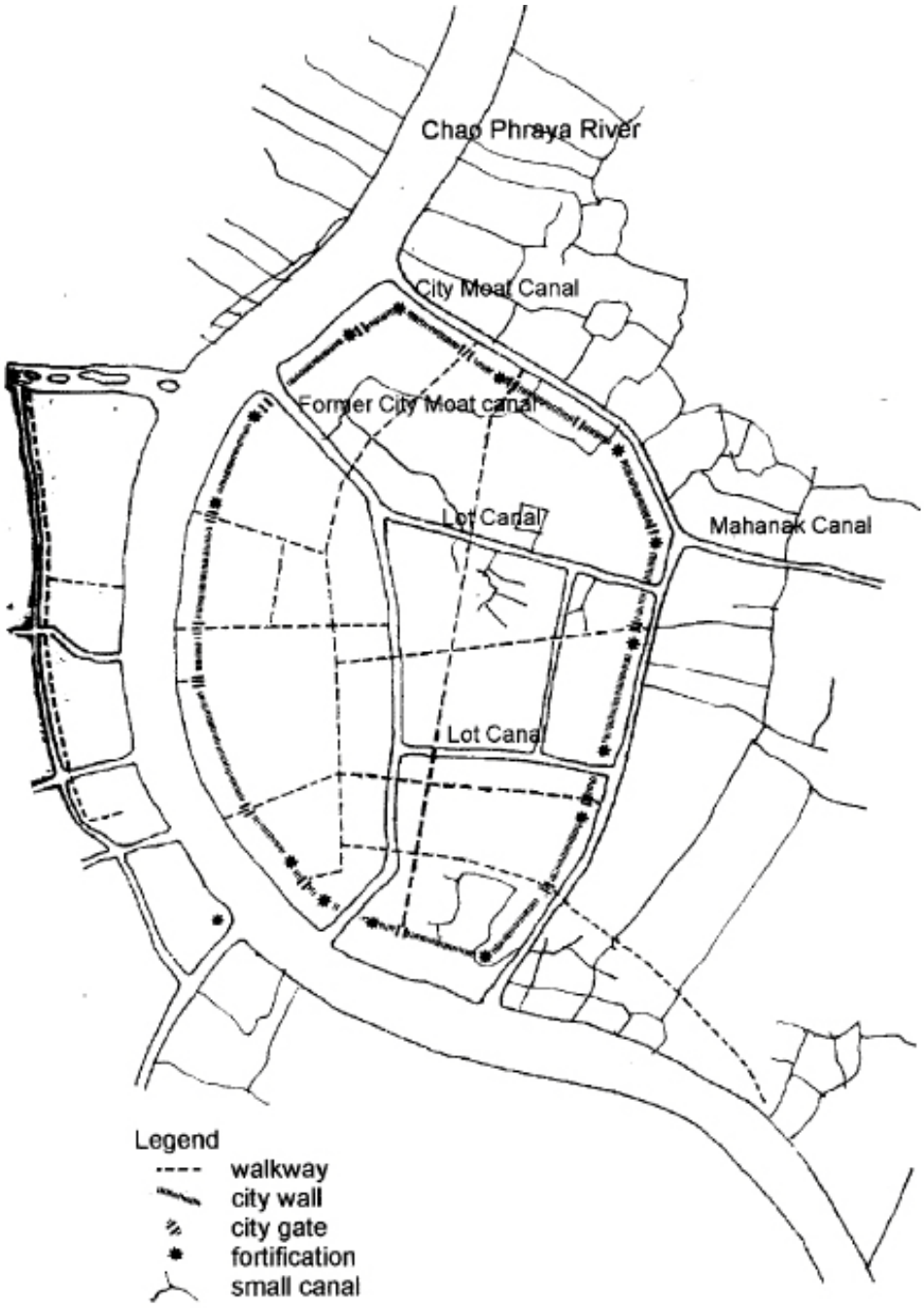



**Figure 4.17**: Canal and street system in the early Bangkok phase, 1782-1851.
*Source*: "Saksri 1991, 24"

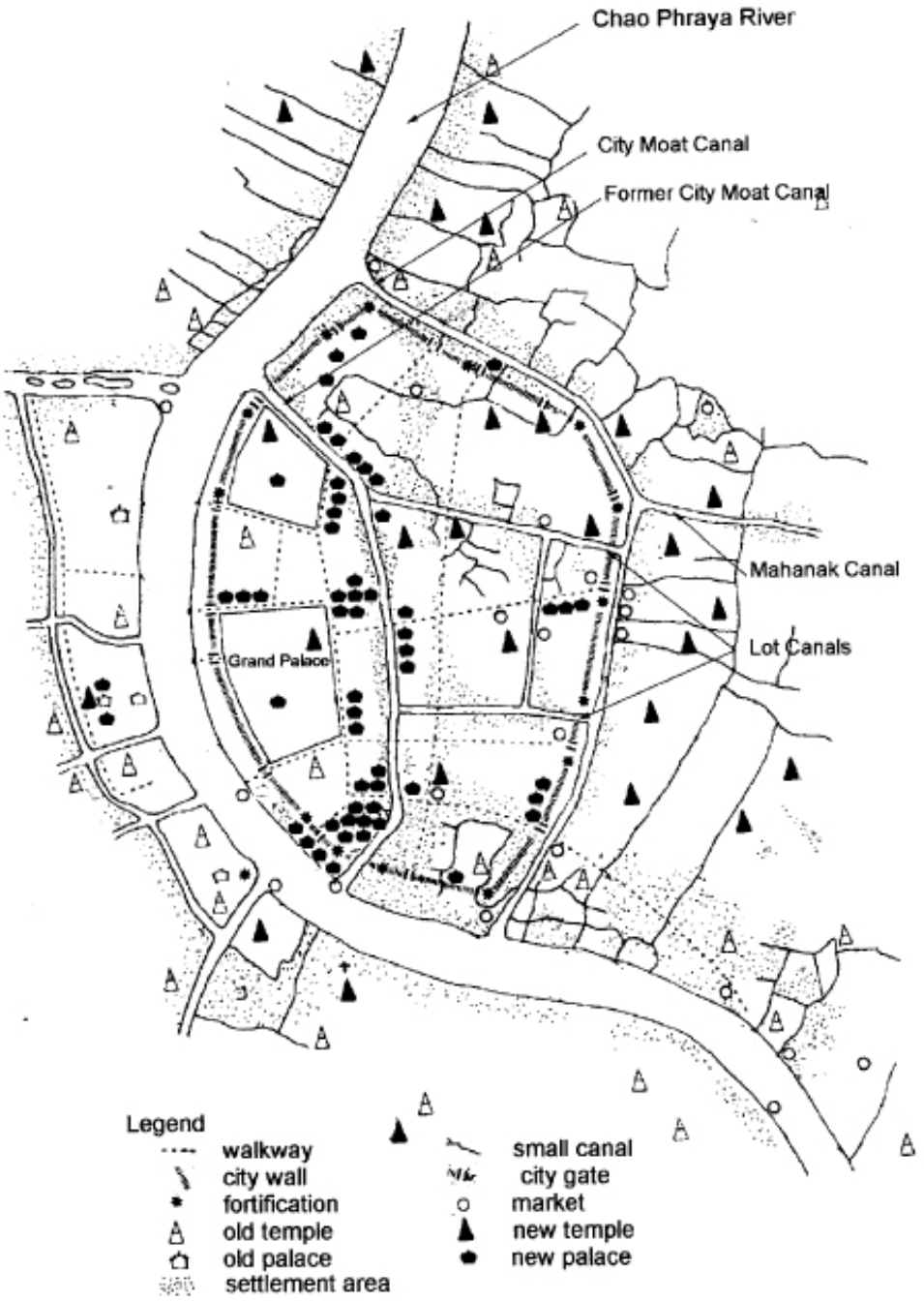



**Figure 4.18**: Settlement patterns in the early Bangkok phase, 1782-1851.
*Source*: "Saksri 1991, 27"


**Figure 4.19**: Canal and street system in the early Bangkok phase, 1851-1925.
*Source*: "Saksri 1991, 31"

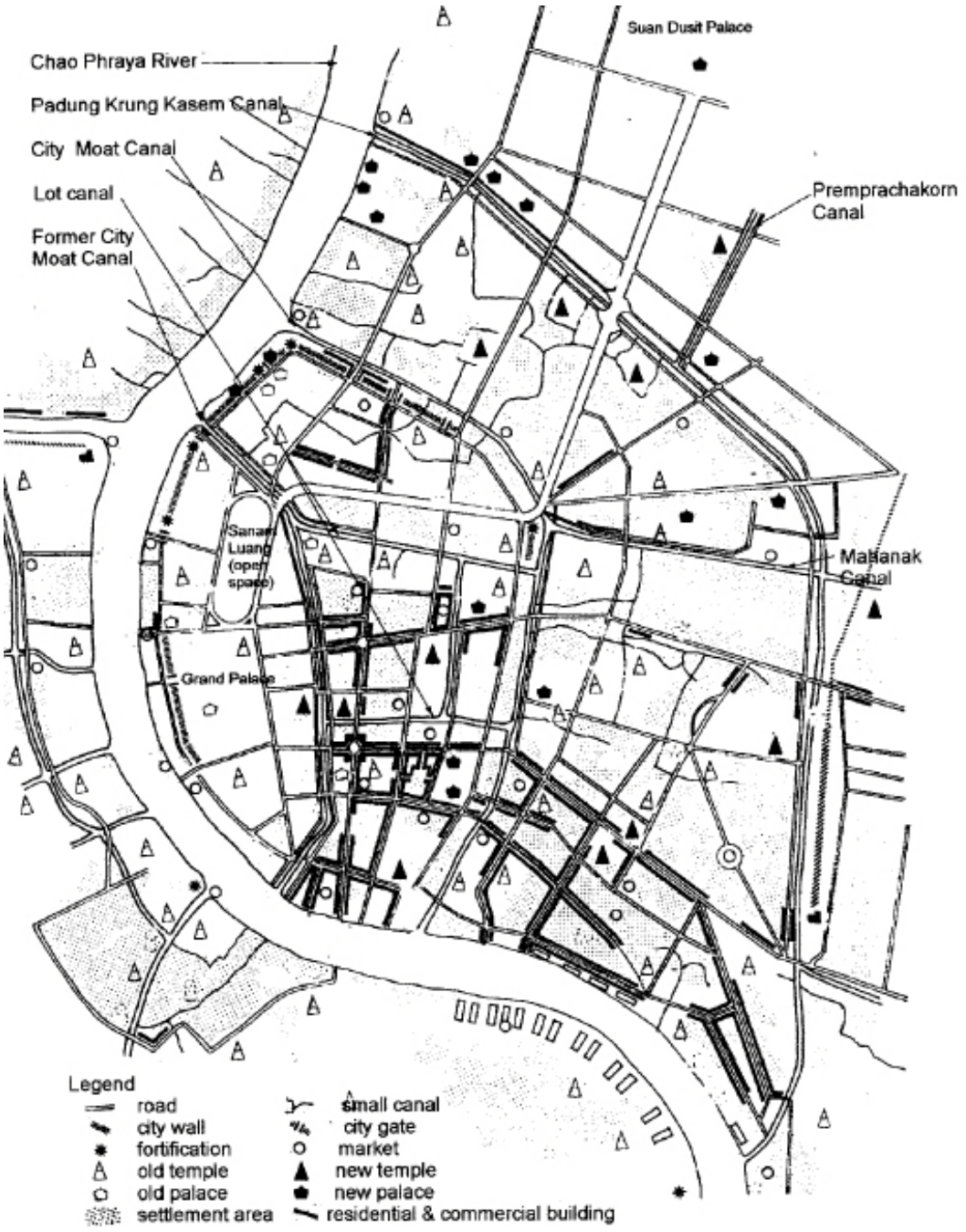



**Figure 4.20**: Settlement patterns in the early Bangkok phase, 1851-1925.
*Source*: "Saksri 1991, 32"

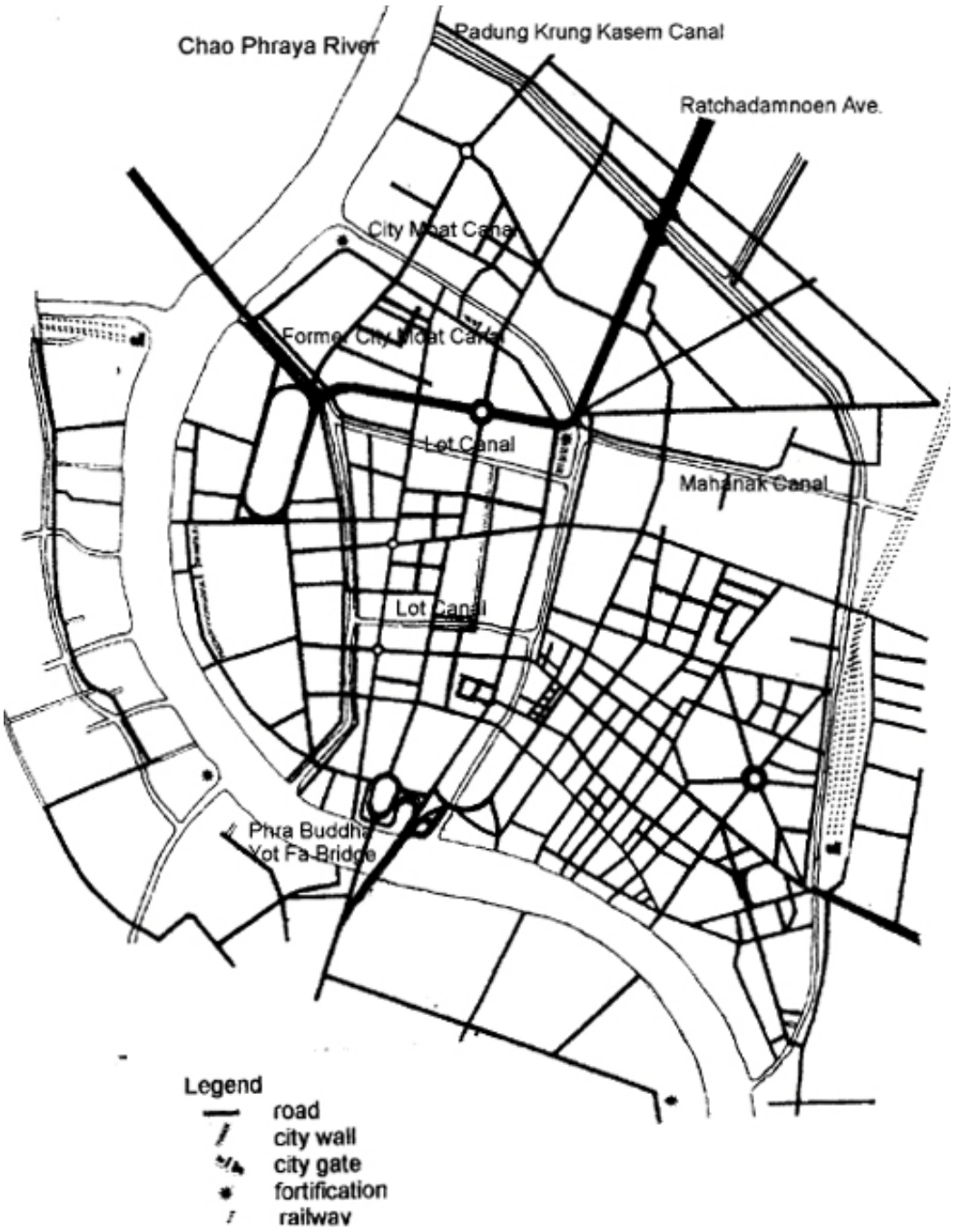



**Figure 4.21**: Canal and street system in the early Bangkok phase, 1925-present.
*Source*: "Saksri 1991, 34"

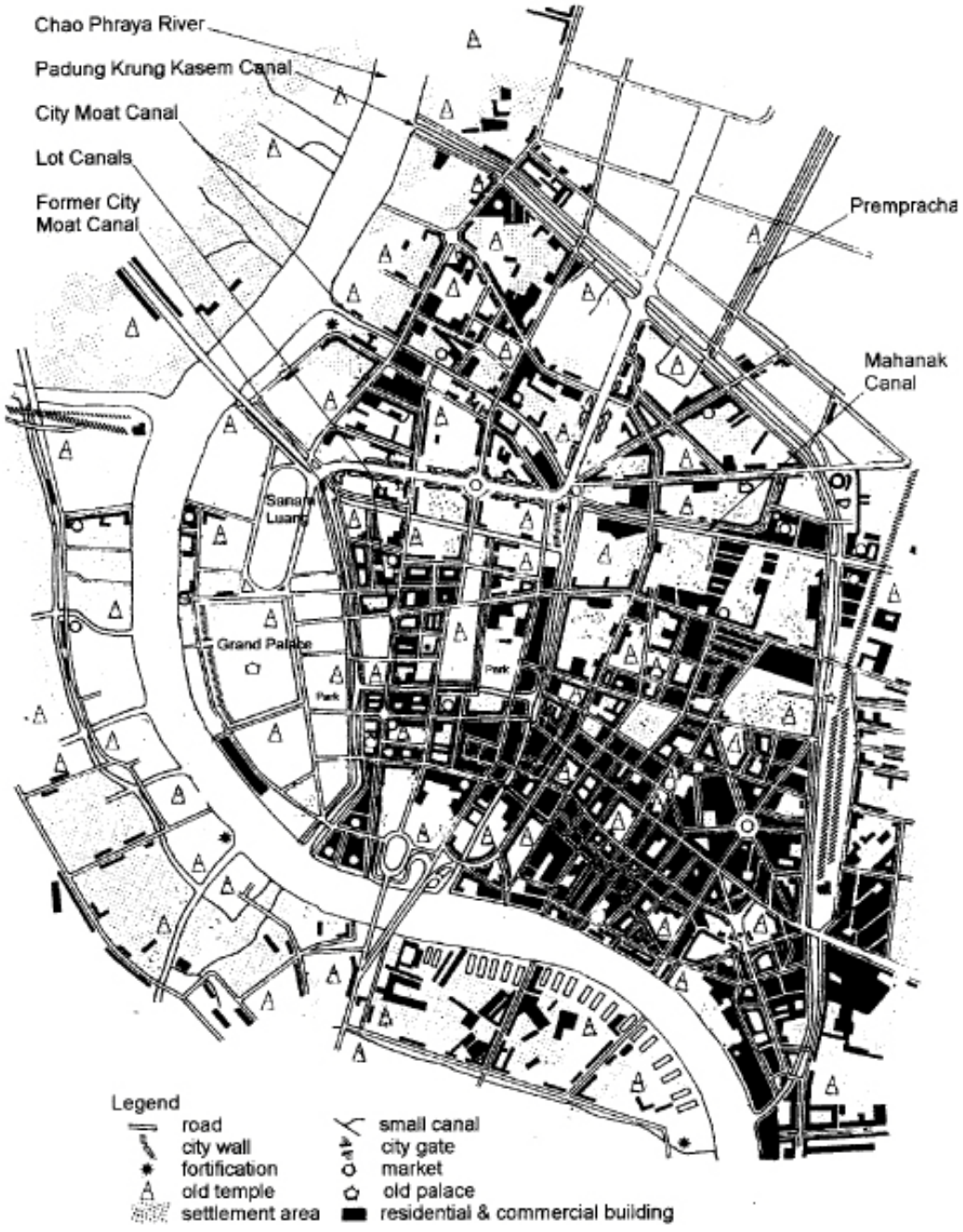



**Figure 4.22**: Settlement patterns in Bangkok, 1925-present.
*Source*: "Saksri 1991, 35"

**Figure 4.23**: Thai residences along the canals.
*Source*: "Beek 1995, 101"

**Figure 4.24**: Strip settlements of the canal near Bangkok.
*Source*: "Jumsai 1988, 155"

**Figure 4.25**: *(Left)* Traffic congestion in Bangkok.
*Source*: "http://www.flickr.com/photos/mikepj/4090023353/"

**Figure 4.26**: Polluted water in an old canal in Bangkok.
*Source*: "http://www.flickr.com/photos/kahtava/82295359/"

The streets and roads have taken over the role of the canals in both primary public spaces and transitional spaces. As the population increased, more and more people are relying on the road and street network system creating horrific traffic congestion in Bangkok. According to Saksri, Bangkok is currently facing important urban problems such as air and water pollution due to the high dependence on automobiles, congestion on the street, and poor water quality in the river system from inefficient water treatment systems.[90] The canals that were once used as a tool to define land-use zones have also been replaced by the street system. However, it became important functional and structural elements influencing contemporary settlement patterns in Bangkok.[91] As a result, the canals are a part of the historic preservation program that restricts its conversion to roads and limits setbacks and height of new buildings that are being built along the water.

To sum up, the transition from Ayudhya to the present day Bangkok suggests that both cities were greatly dependent on the Chao Phraya River. The settlement patterns of both cities were all oriented near the river, which became not only the main source of water, food and economy, but also transportation highways and communications. The extensive construction of canal systems and the river network have made them to become great Thai cities, as the west once perceived them as "Venice of the East." Furthermore, the settlement patterns of both Ayudhya and Bangkok were based on what Jumsai called "anti-city element" in which there is no center or prominent central structure. Instead, the heart of the city is an empty space that fuctions as a public space for all types of public activities. For the Siamese or the Thais, the city center was conceptually in their mind, instead of a physical center of the city. In addition, like many other high densed cities around the world, Bangkok has faced many urban issues including traffic congestions, air and water pollution, and over populated in the inner city.

[90] Ibid., 42-45.
[91] Ibid., 35-36.

*The City of Venice in Italy*

One of the greatest waterborne civilizations in the western world is Venice, which is located in a lagoon of the Mediterranean Sea in Italy. Today, it is still known as a saltwater city and recognized for its art and historical architecture. Unlike Ayudhya, Venice was formed by a natural network of sea waterways. The city obtained building sites by combining and marging sandbanks in the lagoon and as a result, it reduced the water surfaces so that only the canals remained.[92] The site was founded in the early 7th century during the migrations of communities from Roman towns to fish on the higher mudflats of sandbanks.

Venice was shaped by the natural S-form of waterways with islands contained by bridges and canals connecting one to another forming a dense urban network. Since the islands were only a little higher than the level of the water it was described as a city emerging from the sea. The lagoon and its network of waterways and canals has always been crucial to the survival of Venice. In contrast of Ayudhya and Vientiane, which depended on the Mekong River and its rich fertile soil for agriculture, the communities in Venice relied on their saltwater, shallow mudbanks and channels, which was their source of protein and income from marine and salt pans. The sea also provided natural sewerage system for them in which the tides naturally flushed the sewer out of the city. Moreover, the water also served as security and protection for the communities in Venice from land invaders. The accessibility and movements of going in and out of the city was controlled by gates making it difficult for sea invaders. Their superior knowledge and skills of sea navigation has also led them successfully during conflicts and wars.

In addition, dwellings and churches on the islands were joined with footpaths and carriage ways. Venice was known not only for its lagoon and canal systems, but also its architecture. Originally, the architecture and its structures were made out of wood. Not until the events of fire, the citizens replaced all their original wooden buildings with bricks.[93] Their architecure was a combination of various styles from Roman and both to Byzantium and the Middle East forming their own style of Venetian architecture.

---

[92] Braunfels 1988, 81.
[93] Ibid., 86.

**Figure 4.27**: Plan of Venice in the 15th century.
*Source*: "http://rubens.anu.edu.au/raider4/chandler/chap1_files/image002.jpg"


**Figure 4.28**: Bird's eye view of Venice in the 1800s.
*Source*: "http://www.polygraphicum.de/scan/Venedig%20Ansicht.jpg"

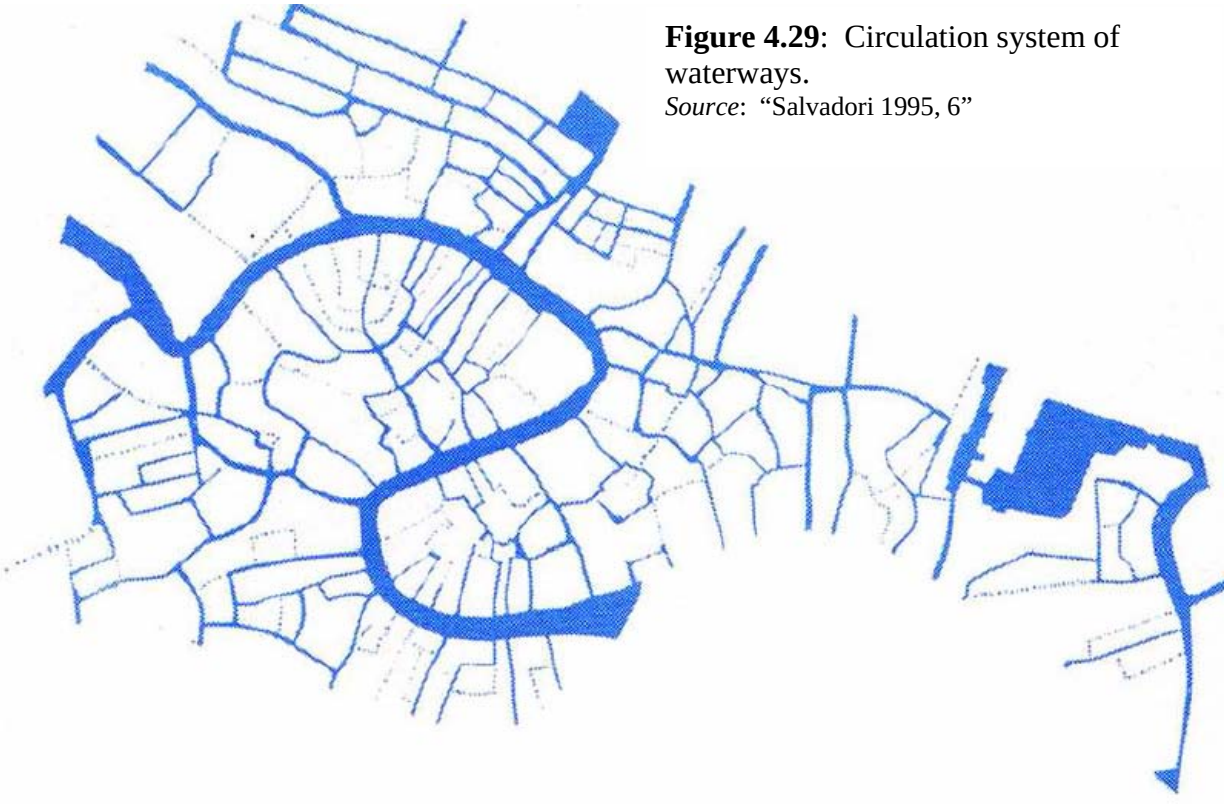


**Figure 4.29**: Circulation system of waterways.
*Source*: "Salvadori 1995, 6"

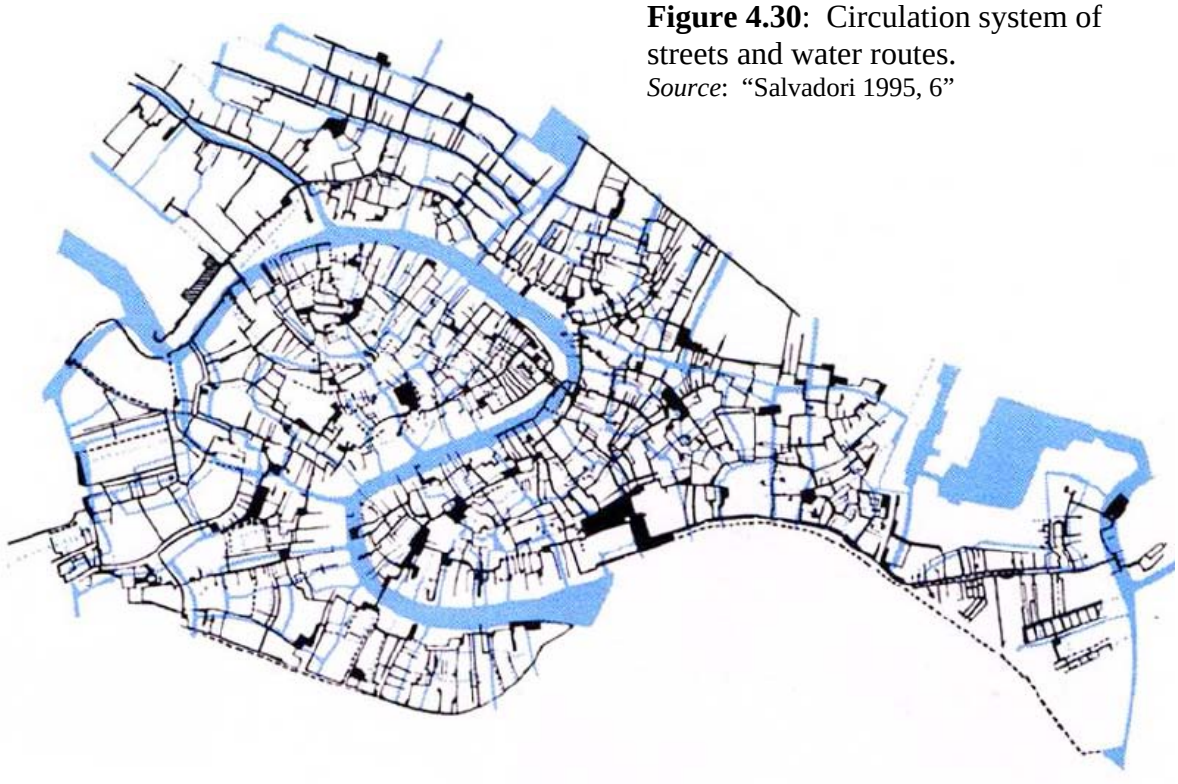


**Figure 4.30**: Circulation system of streets and water routes.
*Source*: "Salvadori 1995, 6"

In contrast of Bangkok and Vientiane, Venice and its islands was distinguished by its maritime style of urban layout, which they are entered at their center, not at their periphery.[94] The entrance of Venice is controlled by the city gates and surrounded by city facades. Its urban layout reflects the canal network system, which separates the hierarchy of spaces. From the focal point of the public space in the Piazza San Marco in the eastern mouth of the channel, the city began to radiate inward along the channel. The building facades face the water while the city is set around squares and green spaces on the outskirt.

Not like the city of Bangkok, Venice is a automobile free city, even until today. The islands were connected with bridges and framework of complex canal systems, its narrow streets has limited modern spread of automobiles. The main transportation system in Venice is the waterways that serve as roads and highways. Adaptation to the modern world is always difficult for many cities, often through a painful process. Due to the influence of new technologies, the canals are now filled with not only canoes and steamboats but also a variety of motor-powered boats. Since tourism has become the main component in its economy with the help of new technologies, the lagoons are polluted and overburdened with traffic congestion, which Braunfels, the author of "Design in Western Europe: Regime and Architecture, 900-1900", claimed it as the enemy of the Venetian architecture that had protected it for a millennium.[95] Furthermore, the new environmental problem in the city faces today is the rising sea level and high tides that may put the whole city under the water. On top of that, the population from the city core are declining as people moving in the mainlands leaving the old decaying historic center of Venice.

**Figure 4.31**: Water street in Venice.
*Source*: "http://www.flickr.com/photos/44128097@N07/4055800346/"

[94] Ibid., 94.
[95] Ibid., 95.

## Chapter 5: Concept and Criteria of the Project

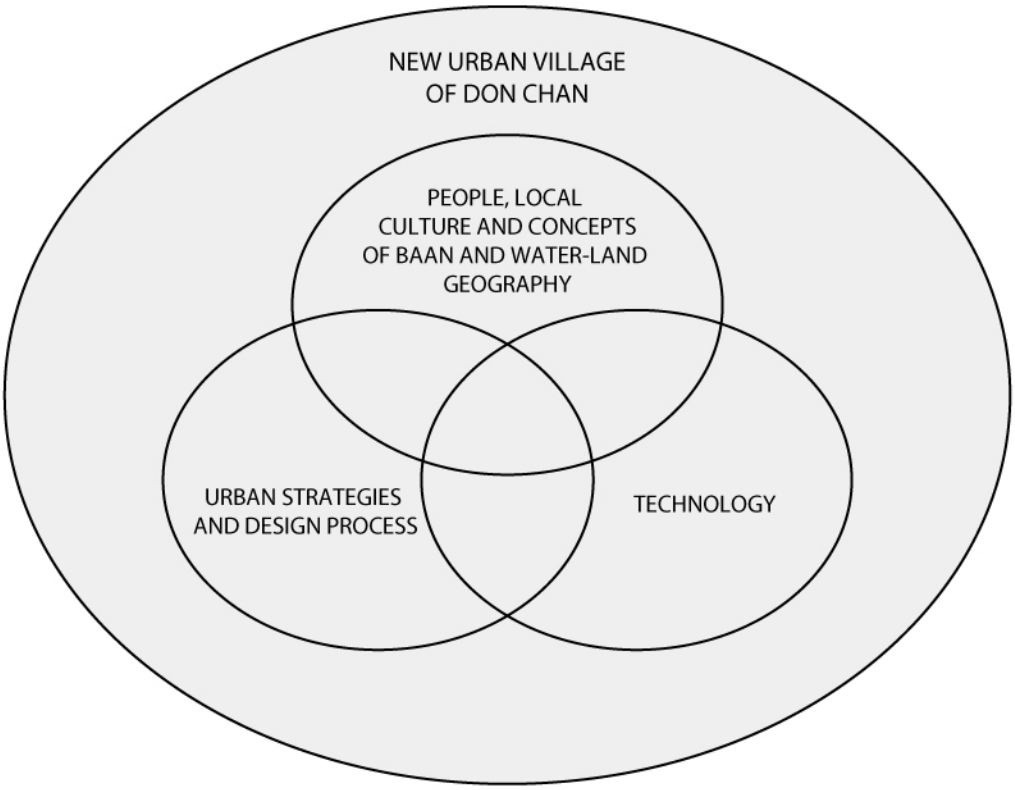



**Figure 5.0**: Design strategy diagram

*"Architecture's function in relating its attributes as technological product to a particular place and time is as a vital connector that links technology with culture," by Ken Yeang*

***Yeang 1987, 12.***

The master plan for Don Chan is driven by a vision to create a sustainable waterfront community for the city of Vientiane, which sets the standards for future projects in Laos. The primary intention is for an integrated and sustainable new urban Lao village along the Mekong floodplains that has a vibrant and healthy way in contributing to the growth of Vientiane city. In this chapter, the master plan of Don Chan's personality and character will be defined by its local concept of *baan* and its relationship to the Mekong River with other urban design strategies.

As a design strategy for the site of Don Chan and its floodplains, the main concepts and key reference to this design thesis are the concept of *baan* and water-land geography. Combining these two main concepts in attempting to develop a conceptual design will result new ideas of a healthy development in the context of architecture, master planning and urban planning. The design will respond to the existing environment of the site and the city in a way that are socially, economically and environmentally responsive to the Lao communities. Furthermore, its unique features, its people and its place will define the personality and character of Don Chan's new urban village. This includes the unique blend of attributes such as its geographical location, the water and the river, the open spaces, the quality of housing and design, and the people who will be living there. The new urban village development will respect and enhance the existing way of life and traditions while accommodating the new lifestyle choices of an evolving culture on Don Chan and Vientiane city.

The studies of water-land geography and *baan* concepts imply that the living area and the working area (agriculture-based) are the key aspirations of the master plan. The relationship between the Lao people and the river is the key ingredient that gives rise to the concept of *baan.* As a result, the *baan* concept in this master plan design is to achieve a self-sustaining community. One strategy to reach that goal is to integrate an agricultural component that functions as productivity and as green open public spaces for health and wellness of the new modern lifestyle. The agricultural component and fisheries from the river and the balance of tourism will be the main ingredient in sustaining the village. With today's new technologies, the Lao agriculture and garden can also be achieved with floating islands, which do not have to depend heavily for the flooding seasons. Furthermore, with the help of new methodologies and technologies, structures do not necessarily have to be situated away from the floodplains on the terraces or uplands. The new master urban village will integrate structures and islands that are floatable, and flood resistant.

The public realm and open green spaces of the agricultural landscape will also contribute in bringing back the river and provide public spaces and activities not only for the Don Chan communities but also to the city and its urban dwellers. The design will also take advantage of the river by using its waterways for alternative transportation routes along the

shores and into the city, which was an important aspect that gave rise to the traditional concept of *baan*. The master plan will cater not only green open public spaces, agricultural landscape, houses and other programs in the traditional characteristic of *baan*, but also other new programs that were not included such as museums, halls, business parks, and recreations.

In addition, adaptation of the Lao people refers not only to the river and water, but also adaptation to the existing climate. The master plan would have to be designed to respond to the climate of Vientiane. The climatic pattern would influence the design process and design work at all stages. For instance, the orientation of the plan, landscape, streets and buildings would have to maximize the shade and reduce solar gain while capturing prevalent winds from the monsoon season. Beyond the embankment of Don Chan, there is a high density of mix-use and residential areas while along the Mekong River on the embankment it contains the lowest residential area. In the master plan, the creation of affordable housing will have to be integrated, including homes for the existing local Lao populations particularly for both the middle and lower working class that are currently temporarily occupying the embankment.

With the key references of the *baan* concept and the idea of water-land geography, the design strategy will then further be adapted to the guidance and urban design strategies from the Commission of Architecture and the Built Environment's "By Design - urban design in the planning system: towards better practice." This article draws from an extensive range of literature and research to create a document that sets out to promote higher standards in urban design and planning through the careful assessment of places, well drafted policies, well-designed proposals, robust decision making and a collaborative approach; in order to create better places from the outset of the planning and development process.[96] It summarizes objectives of urban design to form a toolkit that assists in creating successful public spaces, arguing that successful streets, spaces, villages, towns and cities tend to have characteristics in common. Therefore, its design guidelines will help Don Chan achieve goals in the following:

[96] Commission of Architecture and the Built Environment 2000, 15.

- Character – Don Chan will be a place that has its own character and identity that uses both land and water, and responding to and reinforcing locally distinctive patterns of developments, landscape and culture
- Continuity and enclosure – Don Chan will be a place where public and private spaces are clearly distinguished
- Quality of the public realm – Don Chan will be a place that has attractive and successful outdoor and open areas that are safe, uncluttered and work effectively for the site and the Lao communities. It is to provide opportunities for not only relaxation and recreation, but also for social interaction and appreciation of the built environment and the river
- Ease of movement – Don Chan will be a place that is easy to get to and move through by both from land and water. Its accessibility and local permeability will be achieved by creating places that connect to one another in a manner that is easy to move though and is not susceptible to traffic congestion
- Legibility – Don Chan will be a place that has a clear image and its recognizable routes and intersections will be easy to understand
- Adaptability – Don Chan will be a place that responds and adapts to changes including shifting socio economic patterns and social technological conditions
- Density – Don Chan will achieve a mix of appropriate heights and densities in promoting vitality and ensuring viability of the development

The main goal of the project aims towards sustainable development through the adaptability of local traditional ways, such as the concepts of *baan* and water-land geography, together with modern ideas by way of new technology and being oriented towards green development along the Mekong. The vision and prototype of Don Chan's master plan has to be a good example for other future projects in Laos. This design model can provide a clear understanding of the design basis and strategy so others can adopt the idea and apply Don Chan's concepts to their projects. The understanding of the design concept is crucial in that it allows techniques to be adapted to suit the local condition of any particular riverfront site in Laos.

## Part II:  Design and Synthesis

## Chapter 6: Scope of Project

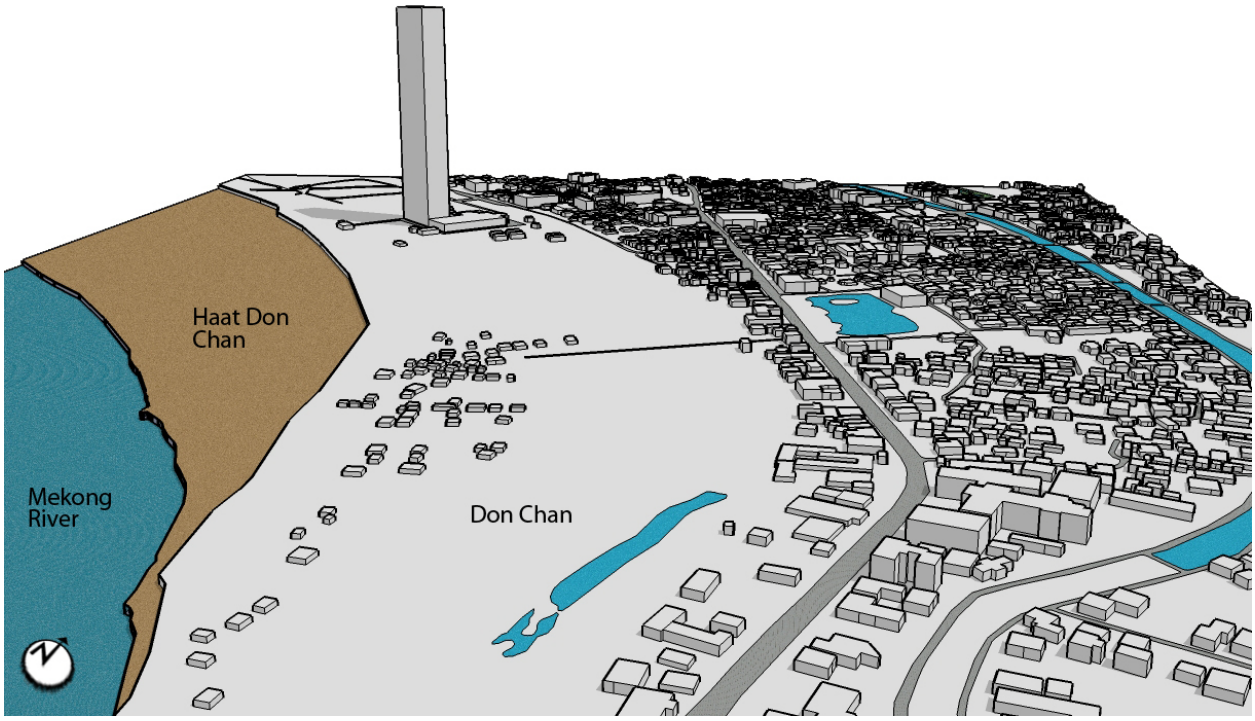



**Figure 6.0**: 3D model of the existing site. *Source*: Done by "Siphathay Phanphengdy."

*"All design project should engage the environment in a way that dramatically reduces or eliminates the need for fossil fuel," by Edward Marzria, founder of architecture 2030*

***Lechner 2009, 1.***

A starting point of this master planning and design exercise is the fullest understanding of the site's constraints and opportunities and an appreciation for the vicinities of existing users. Don Chan and its extensive network of water-land geography forms the site with potential for new urban *baan* developments capitalizing on its proximity to the city of Vientiane and its strategic location in the central region of Laos, falling within the national growth capital of Vientiane. Like any great projects, this chapter begins with site analysis, investigating the conditions of the site before heading towards the design phase.

## Site Analysis

*Climatic Pattern and Potential Sustainable Design*

Don Chan is positioned at +17.97 degrees latitude and +102.61 degrees longitude. Its summer solstice sunrise is around 5:35 am with a sun at a 64-degree slope, and sunsets around 6:48 pm with a 290-degree slope. On the winter solstice on the other hand, the sunrise begins at 6:36 am with a 115-degree sun slope and sunsets early around 5:39 pm with a sun slope of 245-degrees. The summer season is from April to October while the winter begins from November to March. During the summer, the monsoon trade wind blows from the west and southwest bringing cool air from the Indian Ocean. The temperature during this time ranges from the mid 70s to almost 100 degrees Fahrenheit (24-37 in Celsius) with extreme humidity from 70-90%. In the wintertime, the wind comes from the east and northeast bringing cold temperature from the Tibetan plateau downward towards Laos and Thailand. The winter temperature ranges from the mid 50s to mid 80s in Fahrenheit (14-30 degrees Celsius) with 70-80% of humidity.[97]

With the summer-winter season calendar, the people of Laos also distinguish other two seasons in their lunar calendar that associates with not only their superstitious beliefs but also the cycle of agriculture production. These two seasons are known as the dry season from November to March, and the rainy season from late April to the beginning of October. During the rainy season, the precipitation ranges from 3-11 inches of rain (99-300 mm) with almost a hundred days of rain.[98] In terms of sustainability, day-lighting, photovoltaic system, solar heating, natural ventilation and water from both the Mekong and precipitation are possible sustainable resources that Don Chan offers. The rich nutrients in soil along the shore and on the floodplains during the dry season also provide agricultural advantages as well as fisheries for the community. This traditional lifestyle of living off the land can be influentially integrated with the new technology in achieving sustainability. It is like honoring the past and the present at the same time.

---

[97] The BBC. Weather. 2006. http://www.bbc.co.uk/weather/world/city_guides/results.shtml?tt=TT002550. (accessed November 23, 2009).
[98] Ibid.

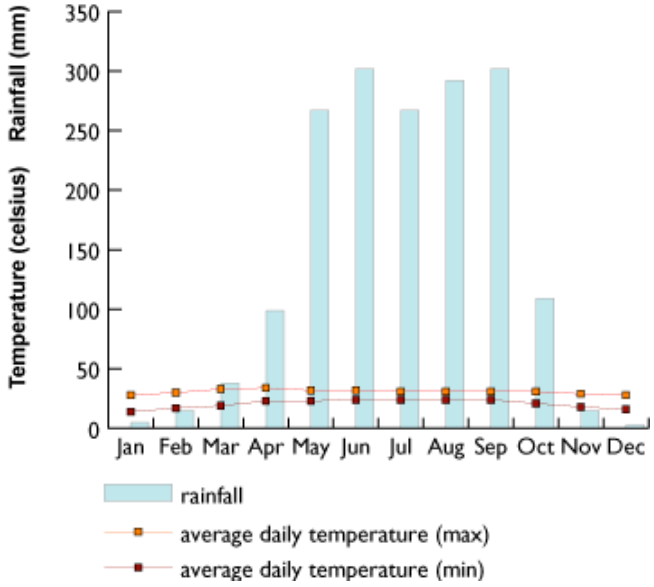
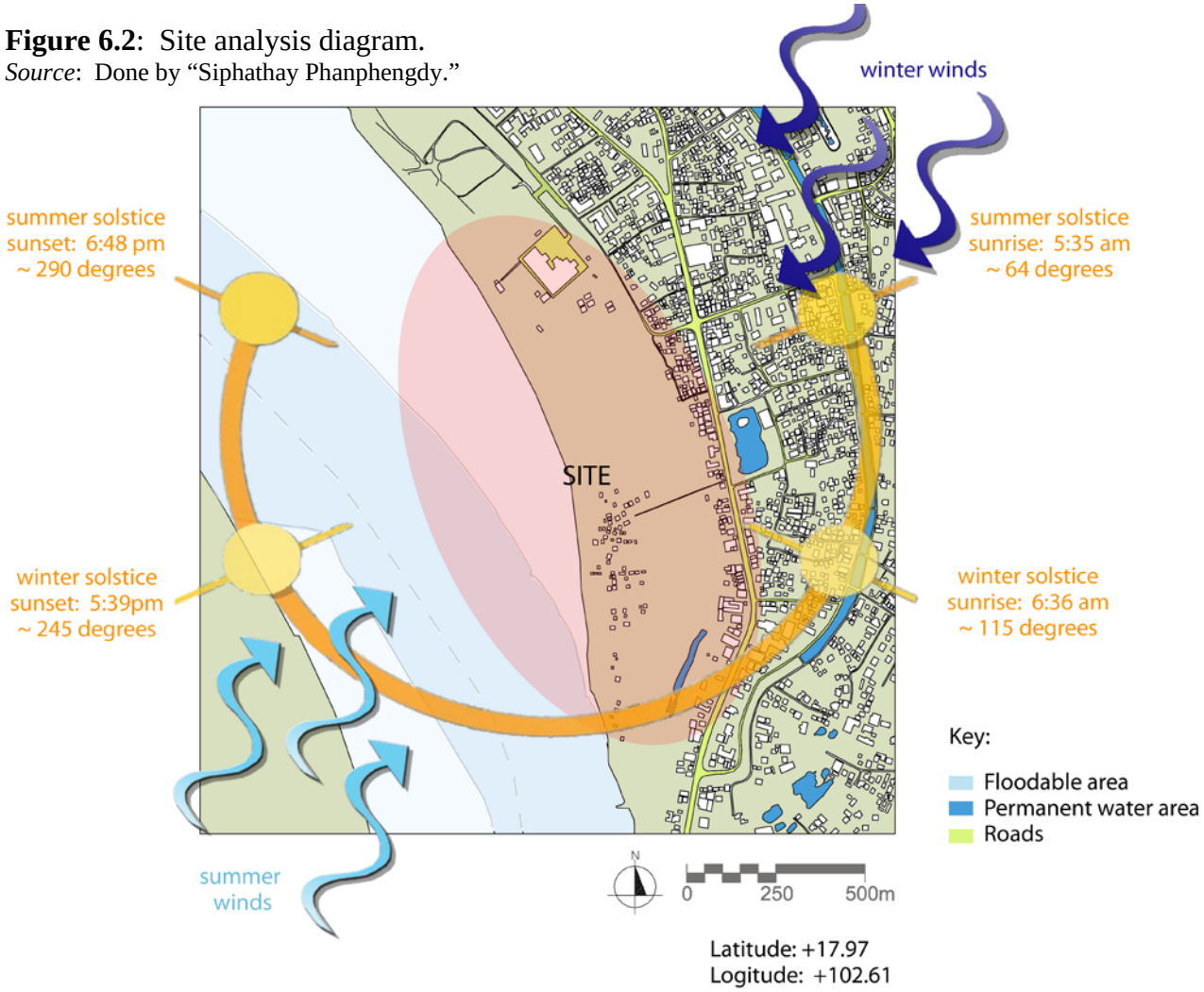



**Figure 6.1**: Average rainfall and temperature of Vientiane city.
*Source*: "http://www.bbc.co.uk/weather/world/city_guides/results.shtml?tt=TT002550"

**Figure 6.2**: Site analysis diagram.
*Source*: Done by "Siphathay Phanphengdy."



*Geology and Hydrology of the Site*

Don Chan used to be an island that was connected to Vientiane city by a bridge, which was built by the French during their occupation. The island was also accessible by boats during the flooding season and by foot during the dry season. During the raining season, the upper half portion of the island became flooded. Lower elevations of the island that were less than 168 meters above sea level were underwater (*figure 6.1*). As a result, this area became fishing grounds for the city dwellers, particularly for the people who lived near the island. Many people also grew plants, rice, fruits and vegetables on the island. Through many years, many people who spent most of there time on the island then decided to settle and make a living there by becoming fishermen and farmers. Their main income was based on selling the agricultural products and fisheries to near by markets. Even until today, some of the Don Chan population still relies on agriculture and fishing as their main revenue. However, as part of the urban development and flood protection program planned by the Lao government, most of the Don Chan population will be relocated to elsewhere.

Due to the changes of the Mekong River by upstream hydroelectric dams and other climatic factors, the recession of water level has transformed the island of Don Chan. As the flood season settles, more and more sediments filling up sand on the floodplains through many years. As a result, the edges of the island near the city have been elevated naturally. In addition, with the help of landfill and embankment for flood protection in that area by the Lao government, Don Chan does not appear as an island anymore but rather as part of the mainland throughout the dry season and part of the rainy season (*figure 6.3*). The only area that gets flooded is now the floodplains near the river. Most parts of Don Chan and the city does not get flooded because they are 170 meters above sea level. During most of the rainy season, the river only goes up to 165 meters above sea level (*figure 6.4*). However, in the case of extreme flood due to heavy monsoon storms that happens rarely, the river level could reach as high as 168-169 meters above sea level (*figure 6.5*). For instance, the flood in 2008 has damaged Vientiane city's shore and many Lao communities.

**Figure 6.3**: Map of Don Chan in the 1960s.
*Source*: Re-drew by "Siphathay Phanphengdy" with data from the Central Intelligence Agency at http://www.lib.utexas.edu/maps/laos.html

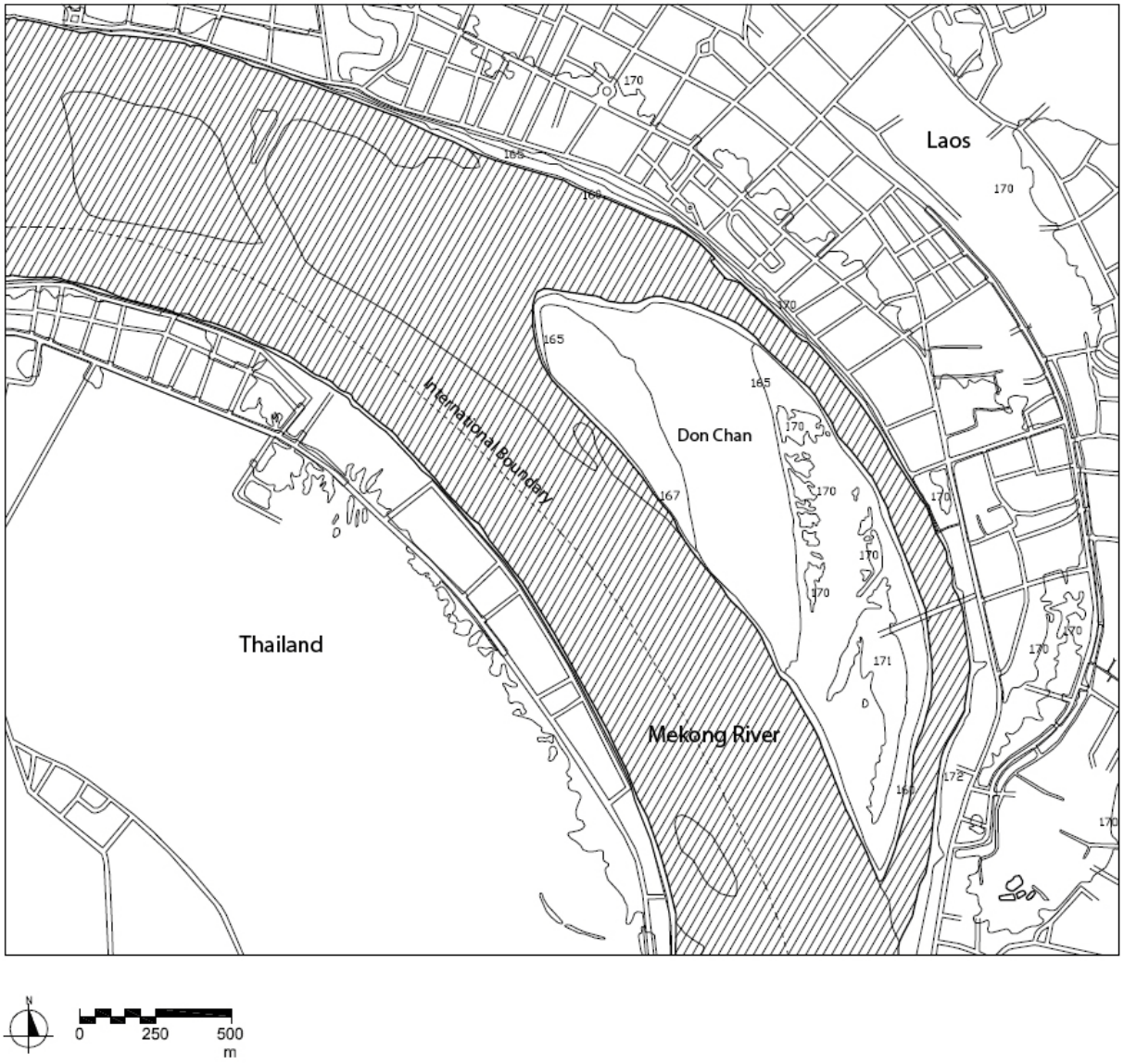
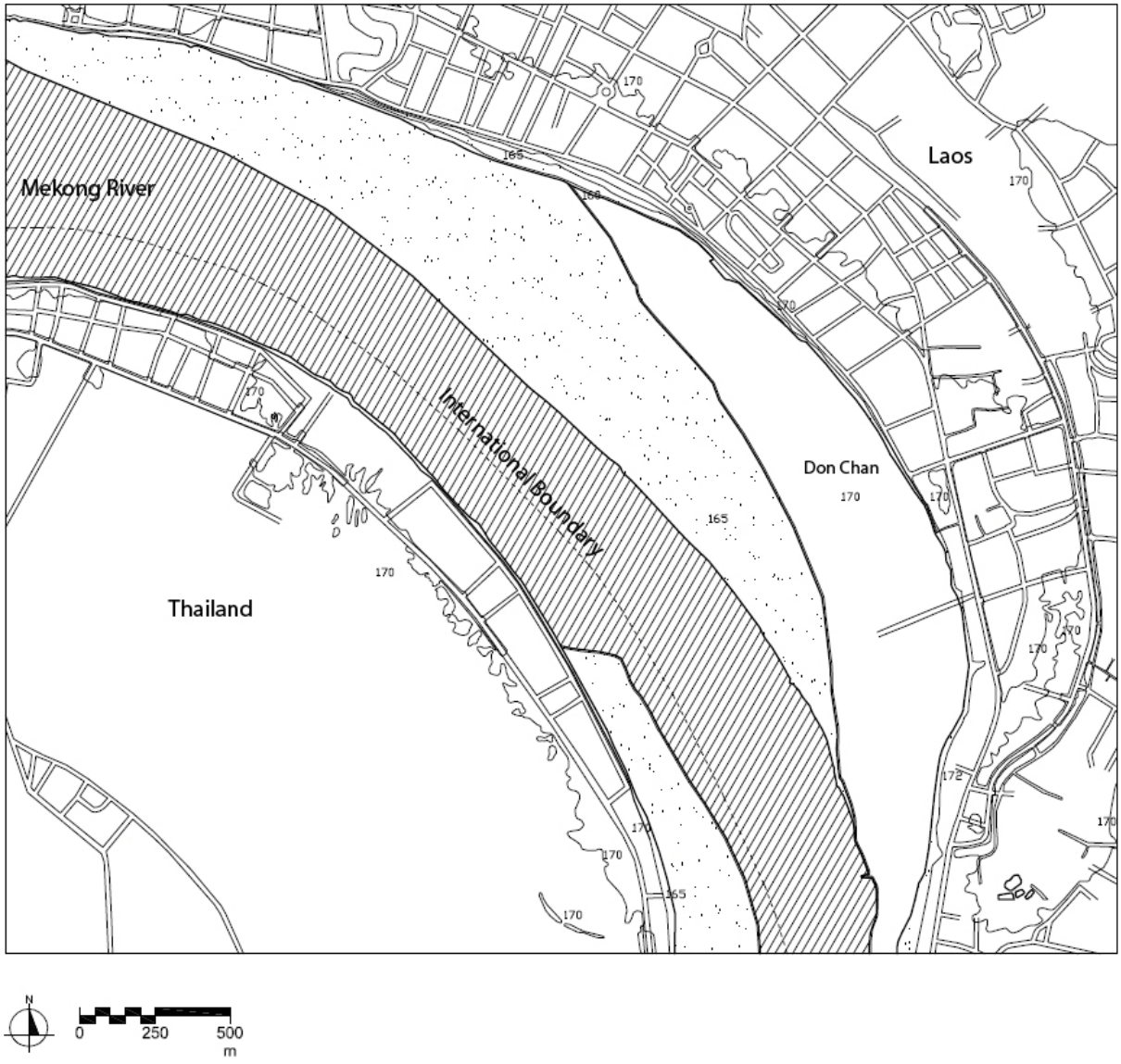


**Figure 6.4**: Current Situation of Don Chan and its Floodplains during the dry season.
*Source*: Done by "Siphathay Phanphengdy" with data from Google Earth.



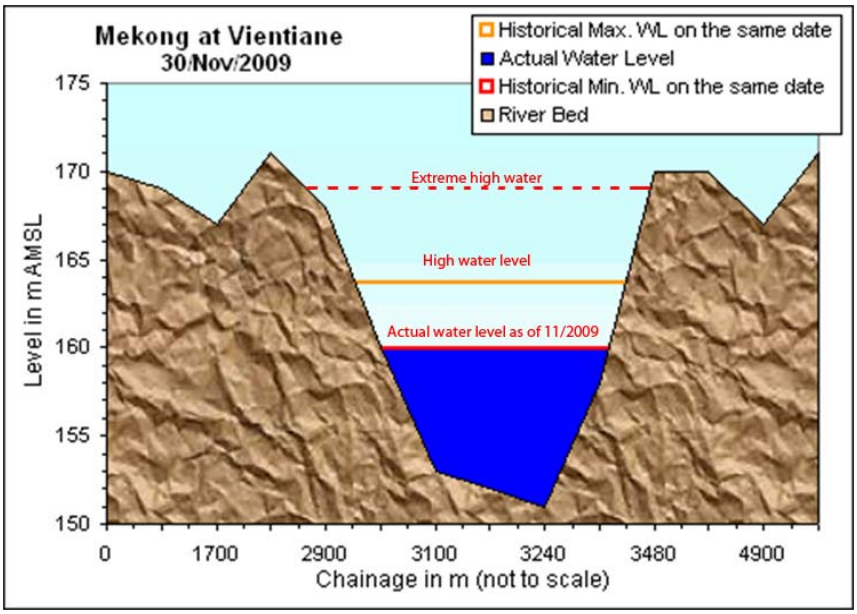
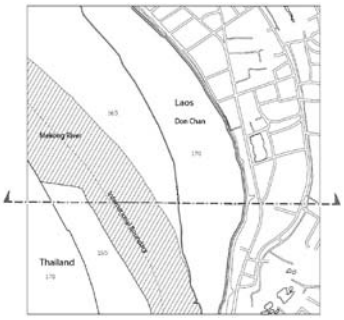



**Figure 6.5**: Water level of the Mekong River in Vientiane
*Source*: Modified by "Siphathay Phanphengdy" from http://www.mrcmekong.org/programmes/wup/Monitor-stations/Vientiane.htm

**Figure 6.6**: Schematic cross-section of the site.
*Source*: Made by "Siphathay Phanphengdy."



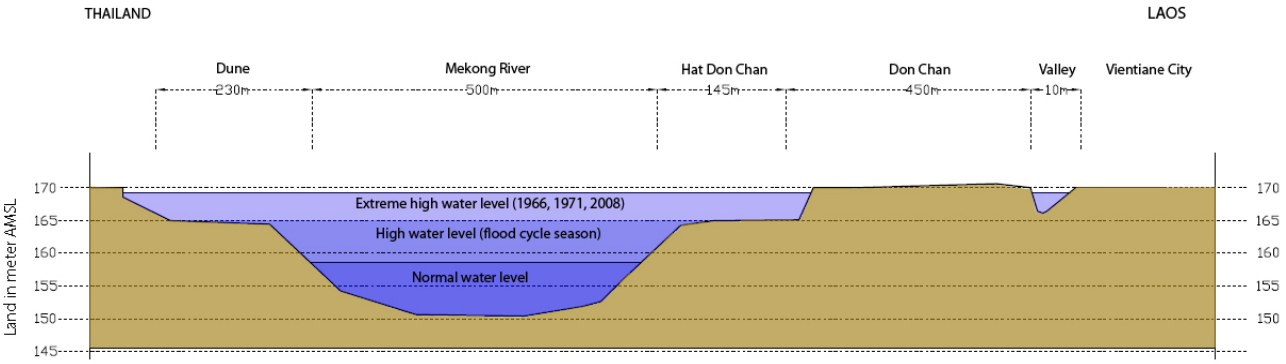



**Figure 6.7**: View of the site during the dry season in 2010.
*Source*: Taken by "Siphathay Phanphengdy."

**Figure 6.8**: The floodplains of Don Chan disappear during the rainy season.
*Source*: "http://bp1.blogger.com/_HZxfZ2F0M60/RzBQmzq0YmI/AAAAAAAAANg/ESUr560aobs/s1600-h/Don+Chan024.jpg"


**Figure 6.9**: Don Chan in November of 2003, before the Don Chan Palace Hotel was built. *Source adapted from* "Google Earth 2009"

**Figure 6.10**: Don Chan in October of 2006, towards the end of the rainy season. *Source adapted from* "Google Earth 2009"

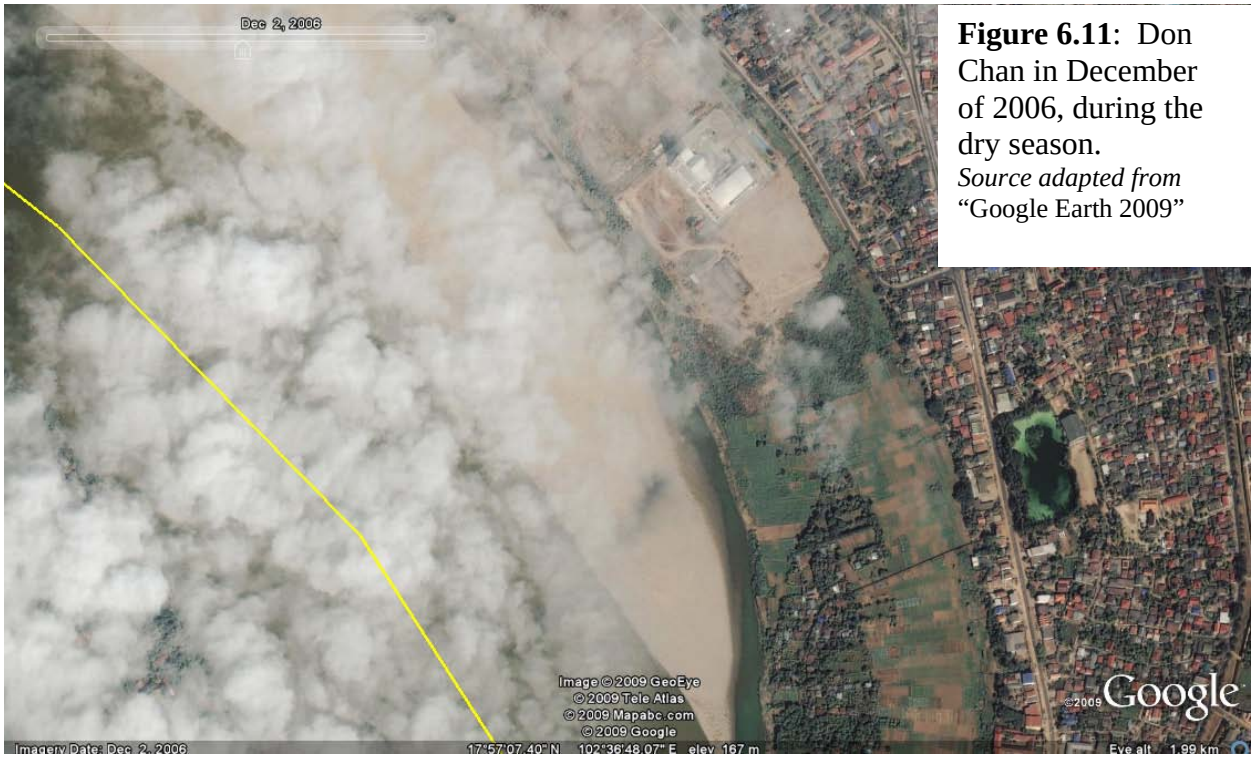



**Figure 6.11**: Don Chan in December of 2006, during the dry season.
*Source adapted from* "Google Earth 2009"

**Figure 6.12**: Don Chan in January of 2009, most current satellite image during the dry season.
*Source adapted from* "Google Earth 2009"

**Figure 6.13**: Extreme flood of Vientiane City in 2008.
*Source*: Done by "Siphathay Phanphengdy."

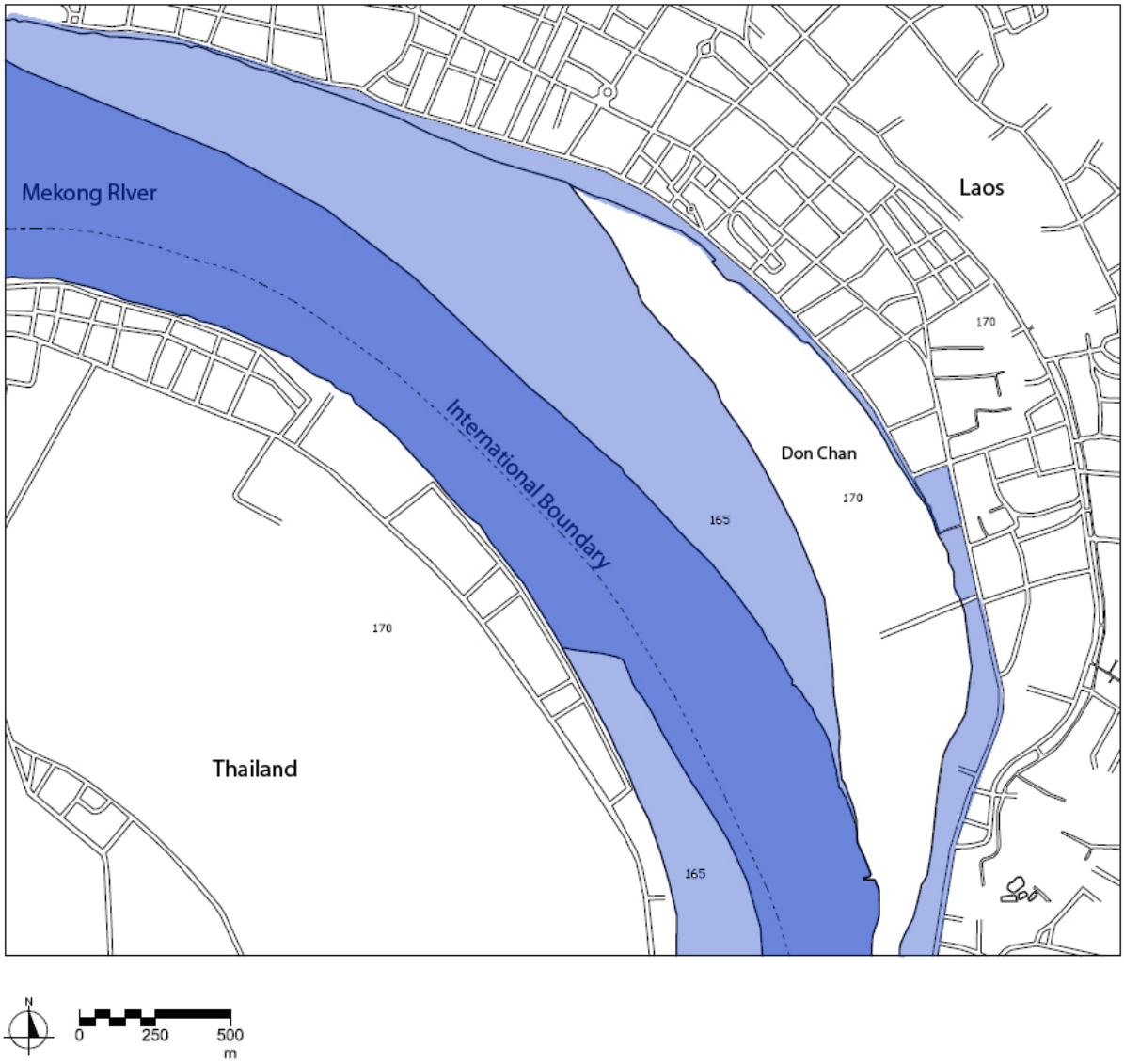
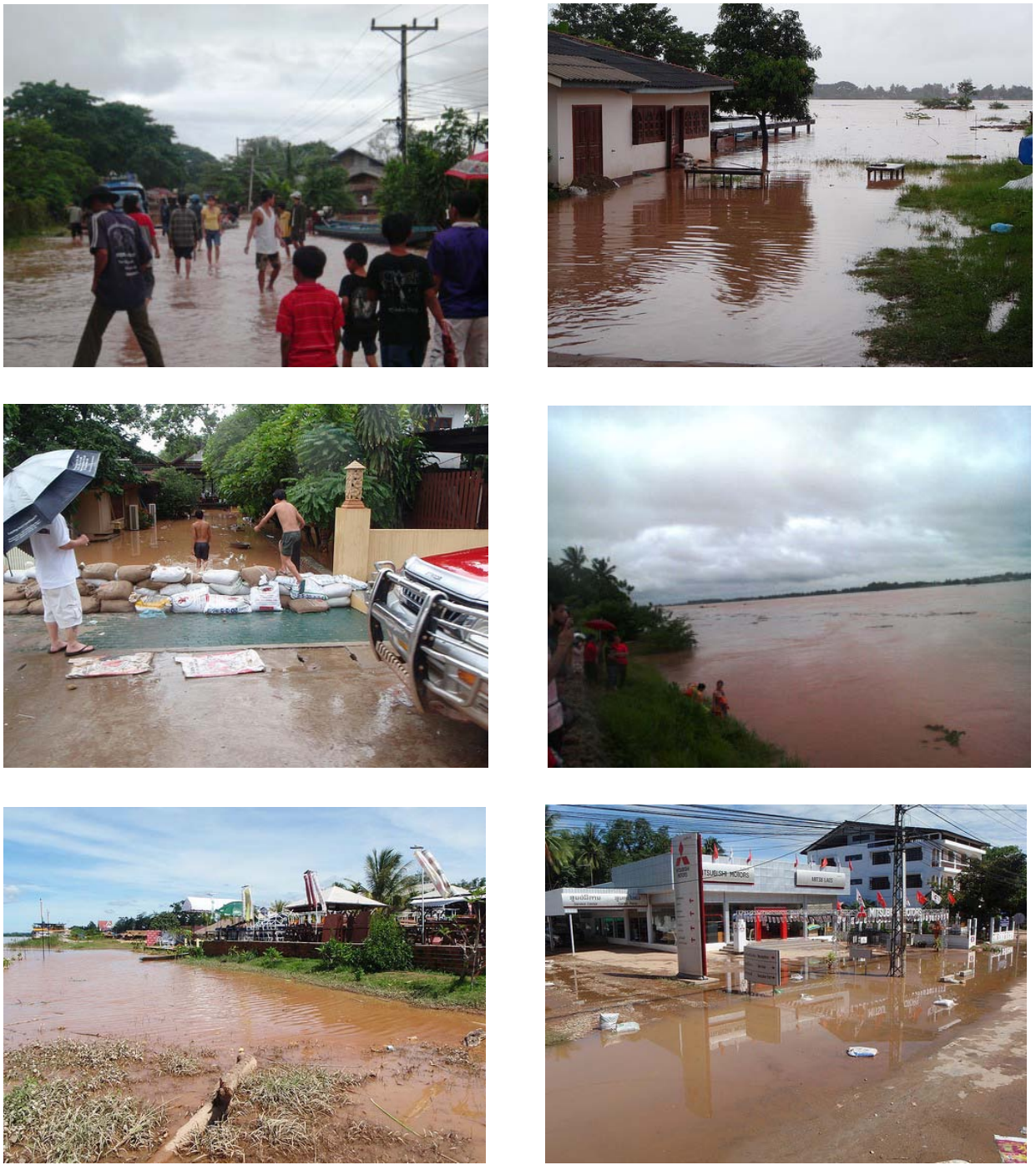


**Figure 6.14**: Images of the extreme flood in October of 2008.
*Source*: "http://www.flickr.com/photos/22491044@N06/sets/72157606686178444/."



*Vegetation, Textures, Water Features and Local Beliefs*

The site is made up of major open spaces with the combination of the green space of the embankment, its sandy floodplain and water. This could be a major factor to consider in the development of this project. The colors of the surrounding buildings and landscape really celebrate the site. The earthy bright yellow/brown sand of the floodplains is evident along the edge of the river with a mixture of green vegetation areas on the embankments. The various color combinations of the buildings and landscape to the east also seem to be beautifully contrasting to the existing site of Don Chan on the west. The colors of Don Chan and its mixture of green and earthy sand appear as a barrier between the river and the city.

Additionally, the site has an interesting contrast of various colors and texture in the earth, sand, green vegetation and the murky brownish water. The combination of texture and the water really celebrates the site. Directly in front of the site is muddy freshwater of the Mekong River which flows in the north-south direction downward dividing Laos and Thailand. Besides the various types of trees, shrubs and grasses on the embankment, there are also plants growing and floating along the river's edge. The water does not appear to be very clean due to its brownish muddy color. Although it does appear that way, the Lao people still use the water in their everyday lives, from planting to bathing and cooking. Furthermore, the soil condition of the embankment is relatively appearing to be drier and harder than the moist and soft soil along the river's edge. However, both soils are fertile since there are various types of greens and plants growing on them. There is also a sense of wildlife at the site such as various types of bird species. Although the water appears to be murky, there are numerous types of fish and water creatures living in the river. According to the Mekong River Commission, they include many types of catfish, carps, flatfish, snakeheads, loaches, cartilaginous fishes, gobies, herrings and anchovies.[99]

In Laos, there is also local belief regarding Don Chan and its Mekong River. One mythology is that there are water serpents such as the *naga* living in the river, which Lao people believed is the source of the mysterious fireballs that emerge from the water every year. The

[99] Mekong River Commission. 2005. http://www.mrcmekong.org/programmes/fisheries/fish_desc.htm (accessed January 10, 2010).

fire events usually occur during the month of November in the Lao lunar calendar. The *naga* is known as the guardian or servant to the Buddha. Its representational statues are often structured in front of congregation halls in Buddhist temples. Furthermore, *naga* is also the protector of water including lakes, ponds and river such as the Mekong River. It has the power to turn the weather or create natural disasters if they are not shown the proper respect. For instance, many Lao people believed that Don Chan Palace Hotel is haunted because it was built near where *naga* lived. The construction itself as well as the absence of spiritual guidance or proper ceremonies disrespected and made the *naga* angry. As a result, several people died and some were missing during the construction of the hotel. Some said that they fell in the river taken by the *naga.* To this day, they mysteriously still cannot find the victim's bodies.

*Land-use*

In the land-use map (*figure 6.9*), the land-use of the site and its surroundings are mostly covered with a high-density of residential zone which is indicated in blue. These residential areas consist of a variety of single family dwellings, multi-family homes, apartments, and shop houses, which composed of shops on the ground floor, and residences on the upper floors. In terms of the shop houses, sometimes the Lao community also turns their home into a restaurant or offices where the commercial space are located in the front of the house while the living space are located in the back. Another way to make profit is that some people also turn their homes into profit making by renting out rooms in their homes for tenants or foreigners to rent.

In addition, there are also Buddhist temples within these residential areas indicated in yellow in the land-use map (*figure 6.9*). They are an important component in Lao daily lifestyle. In fact, every traditional Lao village has at least one Buddhist temple in or near the village. The duty of maintenance of the monastery and the monks fell exclusively on the village and helped bring members together as a single group. Furthermore, there is also a combination of commercial and institutional areas nearby Don Chan. The most dominant hotel in this area is the Don Chan Hotel Palace sitting on the riverbank. Along the shop houses that act as a commercial space, there is also a mixture of markets located near the site. These markets sell a wide range of goods such as fresh vegetables and meat to apparels and equipments. In terms of institutional spaces, these areas include public schools, police stations, civil and governmental

buildings such as embassies, people's courts and Supreme Court for instance. There are also clinics located to the east and a large medical campus located to the north of the site.

*Circulations and Urban Fabric*

Vientiane's transportation system relies heavily on automobiles. There is no rail system whatsoever, but rather a small amount of public buses, taxis and *tuk tuk* (the three-wheeler) for the public to use. In Vientiane city, people tend to travel by vehicles, motorcycle and bicycles more than by foot when traveling long distances. Due to the high humidity, relative heat and frequency of precipitation, there is not an extreme amount of pedestrian traffic through out the city. People usually walk only if it is necessary and to nearby destinations such as close by markets, temples and shops. There are sidewalks along most of the roads and streets in the city but most of them are not being used. What the city needs is more shaded areas and more greenery along the pedestrian and cycling paths to encourage population to shift away from automobiles. Furthermore, the Mekong River and its canals can also be designed to cater water transportation as an alternative way of traveling.

The network of vehicular and pedestrian circulations is summarized in map (*figure 6.10, 6.11*). There are three major vehicular traffic routes that are located parallel to the river from north to south, which are intersected by various secondary streets. The central major road is divided into one-way streets. It is one of the major roads that people usually use to travel around the city, which sometimes become overcrowded at times during peak hours. These combinations of sidewalks and road systems are the primary traffic routes for both pedestrian and vehicular circulation. To get to the site, one can take the road as if they are going to the famous Don Chan Palace Hotel near the Mekong. The road that is parallel to the site edge is called Fa Ngum road, which is accessible for both vehicles and pedestrians. There are also dirt trails that connect to this road leading to the site. Another existing access to the site is located towards the south of Don Chan Palace Hotel, which is a narrow unpaved street that leads to a small temporary community. This road is also accessible by both pedestrian and vehicles, but since the community is from a lower working class, people going in and out from this small community usually travel by foot, bicycles and motorcycles on a daily basis. Within the urban fabric and the site, the most compelling structure is the Don Chan Palace Hotel. It is a 14-

storey hotel, which consists of 239 rooms and houses, restaurants, hall and recreation facilities, lounges, bars and a club on the first and third floor. The hotel is the only structure in the immediate vicinity that is a tall rectangular form, yet it still fits into its urban surrounding due to the flat, fat portion of its riverfront rectilinear element in conjunction with its tall rectangular tower.

**Figure 6.15**: Land-use map. *Source*: Done by "Siphathay Phanphengdy."

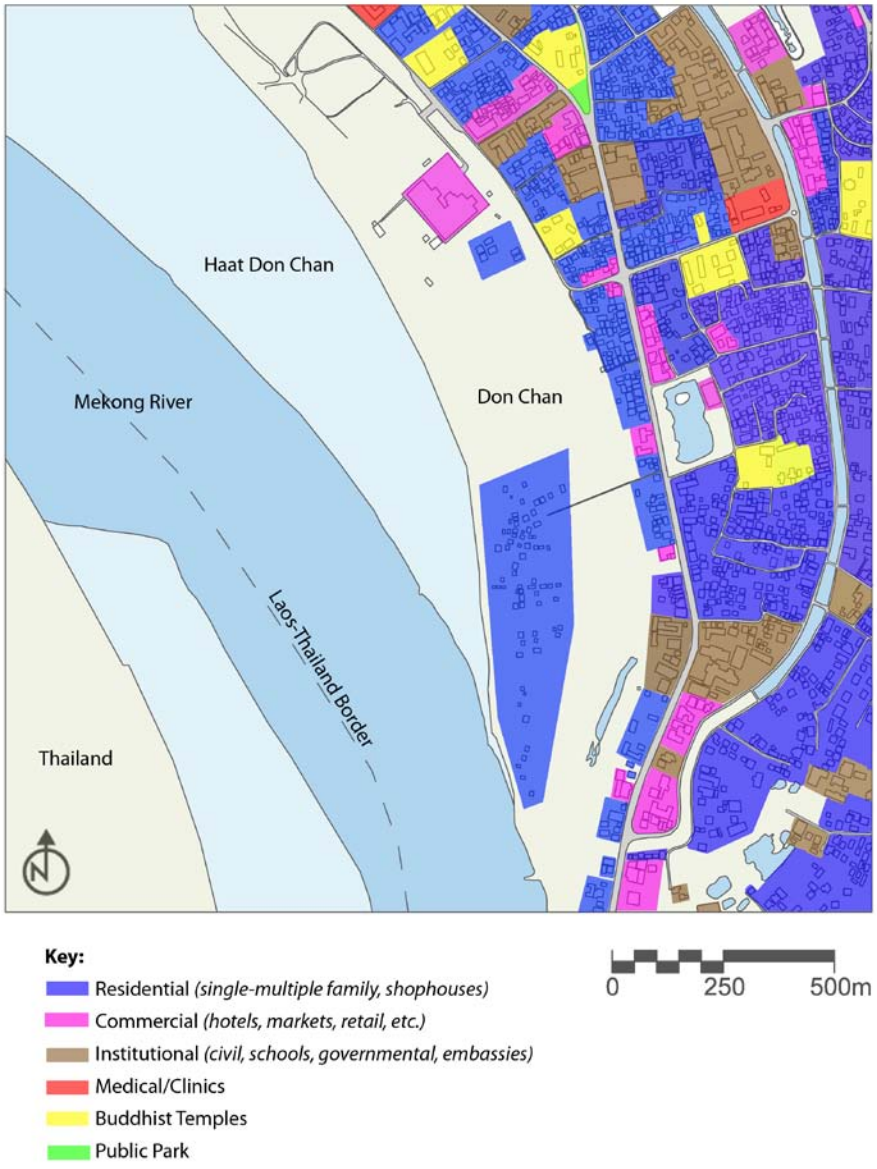


**Figure 6.16**: Landmarks of Vientiane City near Don Chan and its Floodplains.
*Source*: Done by "Siphathay Phanphengdy."

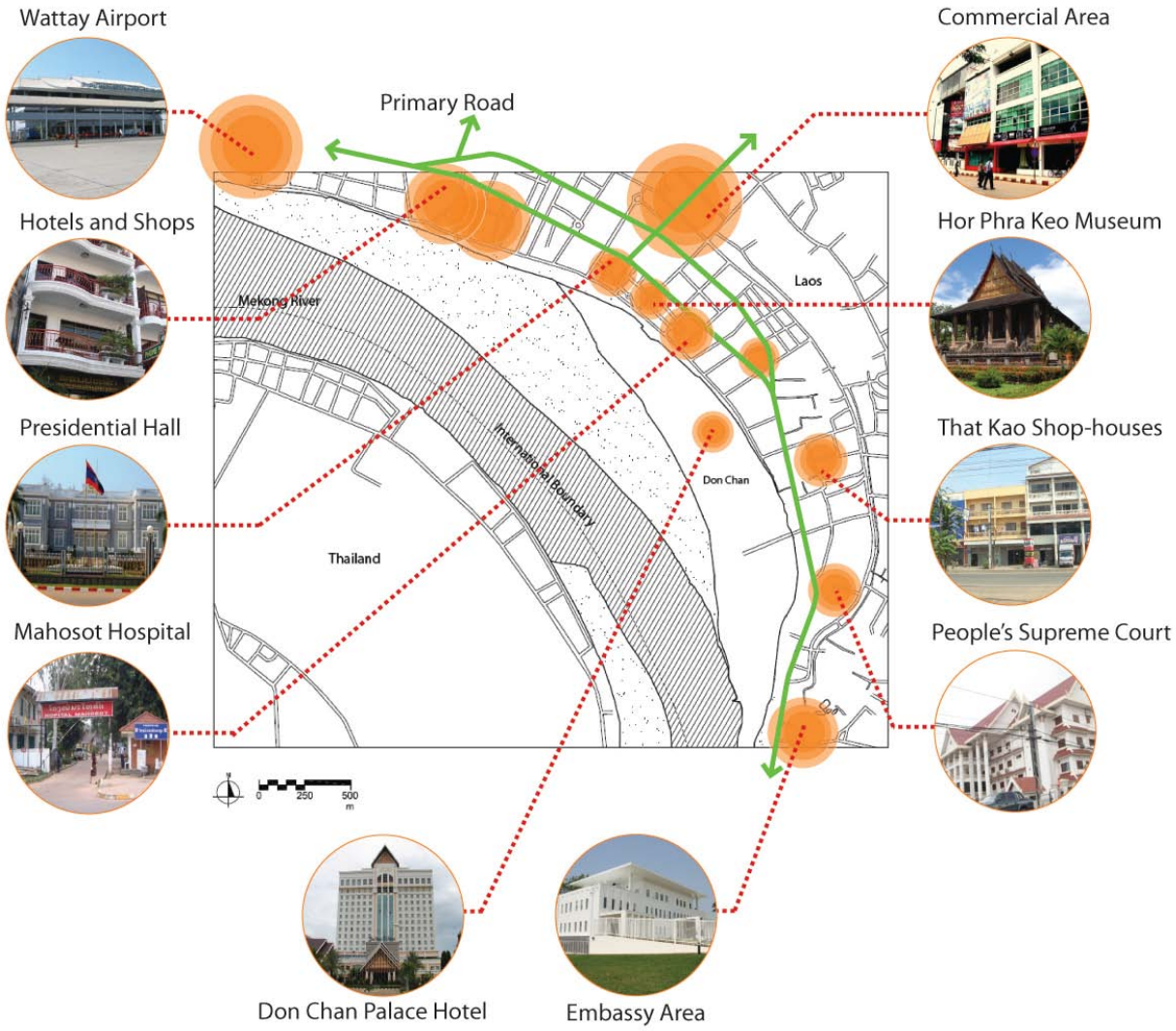


**Figure 6.17**: Vehicular and Pedestrian Circulation.
*Source*: Done by "Siphathay Phanphengdy."


**Figure 6.18**: The urban density with existing circulation and road network system.
*Source*: Done by "Siphathay Phanphengdy."


**Figure 6.19**: The existing urban fabric of the site and its immediate surroundings.
*Source*: Done by "Siphathay Phanphengdy."

**Figure 6.20**: Physical model of the site and its surroundings. The purpose of these massing models is to give a more physical sense of its surrounding landscape and buildings in comparison to the site, the river and the city. The design should cater to the existing Lao communities and the city for open public waterfront and public green space.

*Source*: Done by "Siphathay Phanphengdy."

*The Existing Don Chan Village*

Don Chan village is located to the south of the site, about two kilometers downstream of the Mekong River from the center of Vientiane City. The main access to the village is by foot, bicycles or motorcycles. One must use the small bridge, especially during the raining season (*figure 6.23*). It is also accessible by vehicles from Don Chan Palace Hotel, but it is relatively more than half a kilometer of unpaved road. This small community is mainly dependent on the Mekong and its floodplains for fishing and agriculture. Most of the population makes their living on the island and some work in the city. Fish and agriculture products are their main sense of income and food. The types of fruits and vegetables they grow are cucumbers, lettuce, tomatoes, papayas, coconuts, logan, corn, etc. Due to the planning of flood protection and urban development by the Lao government, this community will eventually be relocated.

**Figure 6.21**: Don Chan village is located to the south of Don Chan Palace Hotel.
*Source*: "Siphathay Phanphengdy."


**Figure 6.22**: Images of Don Chan village.
*Source*: "http://www.flickr.com/photos/22491044@N06/sets/72157606631533497/"

**Figure 6.23**: Don Chan Bridge that links the island to the city. The bridge becomes not only a gateway but also serves as a playground for kids, particularly in the raining season. During the dry season on the other hand, the villagers would grow fruits and vegetables underneath the bridge.

The length of the bridge is about 225 meters long (740 feet) and almost 2 meters wide (1.8 feet). The structure is made from coated steel with wooden floor decking with reinforced concrete foundations.

*Source*:
"http://www.flickr.com/photos/22491044@N06/sets/72157606631533497/"

*Current Value of the Mekong River in Vientiane City*

Besides fishing and agriculture along the Mekong deltas, many restaurants and hotels are also common in Vientiane City shores. Many of these riverside restarants and hotels lining the Mekong shore use the river as an advantage point to lure in customers for its spectacular views and open atmosphere. However, most of the small wooden restaurants along the floodplains (*figure 6.26 and 6.27*) are temporary structures. These short-term restaurants are taking advantage of the non-occupied space along the floodplains. The Lao government will eventually remove them from the construction site for the flood protection and urban development plan. In addition, most of these temporary restaurants are also there illegally making the most out of the shores while they last.

**Figure 6.24**: View of the Mekong from Don Chan Palace Hotel. *Source*: "http://media-cdn.tripadvisor.com/media/photo-s/01/1a/f9/53/view-of-the-mekong-river.jpg"

**Figure 6.25**: Lao Garden Restaurant near Don Chan Village.
*Source*: Taken by "Siphathay Phanphengdy."

**Figure 6.26**: Mekong riverside restaurants in Vientiane during the dry season. *Source*: "http://2.bp.blogspot.com/_sBx1I8XJ7uU/Sxos02hqyrI/AAAAAAAADd4/88ZMuTp0Mis/s400/viantiane-restaurants-by-mekong.jpg"

**Figure 6.27**: Mekong riverside restaurants in Vientiane during the wet season. *Source*: "http://media-cdn.tripadvisor.com/media/photo-s/01/43/c4/4a/the-mekong-river-front.jpg"

*Mekong edges on the Thai side of Si Chiangmai District*

On the opposite side of the site and the Mekong River is a Thai district of Si Chiang Mai. Many shorelines of Thailand across from Vientiane are developed as riverfront embankments, which provide the Thai communities protection from flooding. The riverfront is elevated up to 170 meters above sea level with hard edges matching the city level. Their creation of the public river walks, pedestrian and cycle paths enable the Thai communities and visitors to experience the beautiful views of the Mekong River. However, the downside of this type of hard edge development along the delta is that it changes the perception of what the Mekong edges were like traditionally. There is no connection between land and water. Now the communities are unable to utilize its water and floodplains like those that they used to for fisheries and agriculture. In the past, the soft edge between land and the river enabled the floodplains to be flooded during the raining season, which provided fishing grounds for the community. The floodplains during the dry season also gave agricultural opportunities for the community. The sense of a self-sustainable community that once relied on the Mekong is now disappearing. The water and its floodplains are now appeared as an amenity of the Mekong.

**Figure 6.28**: The Mekong riverfront of Thailand across from Vientiane. *Source*: Left drawing by "Siphathay Phanphengdy", top right "http://farm4.static.flickr.com/3478/3908775753_62d15239cc_o.jpg", bottom right "http://static.panoramio.com/photos/original/7975368.jpg"

## Chapter 7: Design

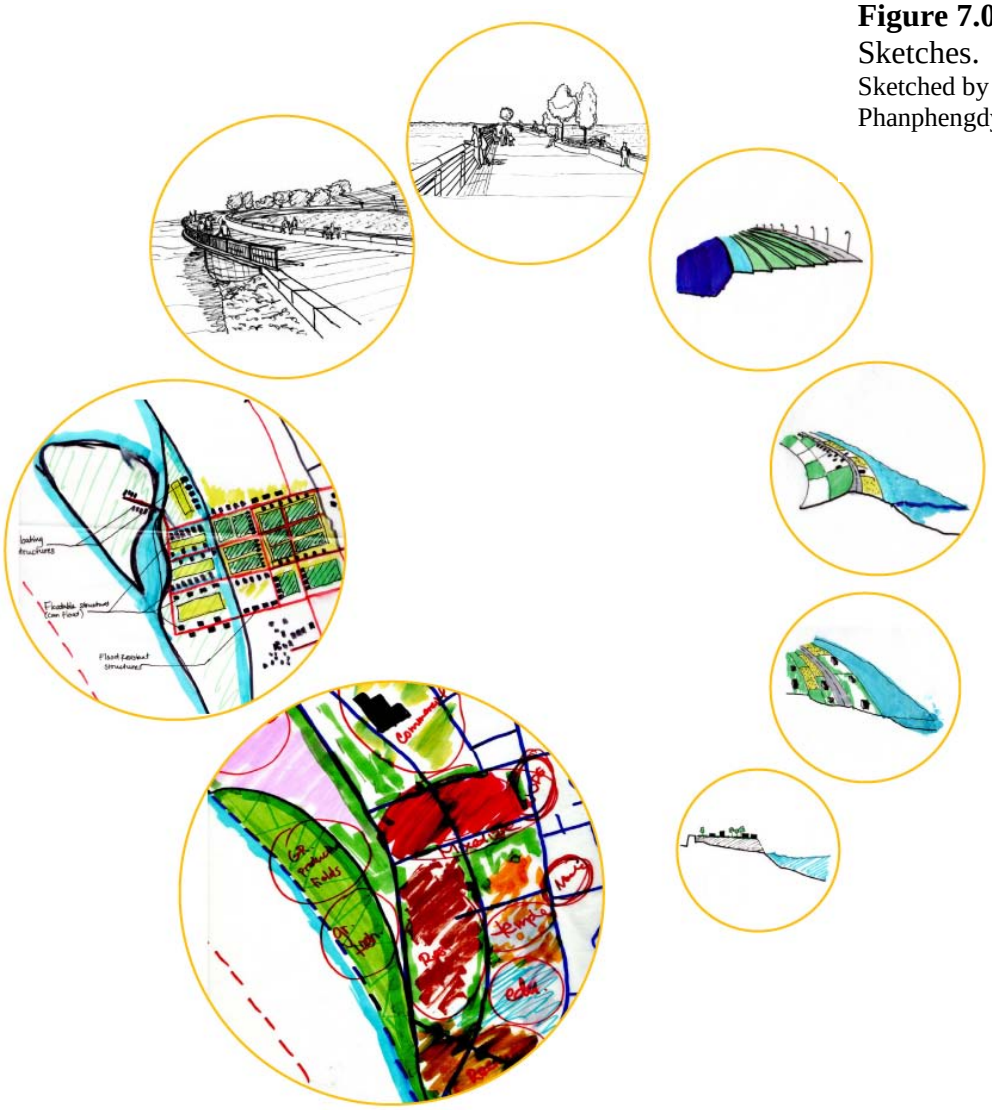


**Figure 7.0**: Design Sketches. *Source*: Sketched by "Siphathay Phanphengdy."

This chapter describes the design concepts and the design process, and illustrates the final intervention of the master plan. Its guidelines are designed for preserving the unique physical characteristics of Don Chan and reestablishing them as a new urban village with mixed-use public spaces and connectors of key public spaces to the city of Vientiane. The design of the master plan aims for three distinctive users: the existing Don Chan village, the city population, and the tourists/visitors.

***Program***

A traditional *baan* is a self-contained village that obtains all the basic needs from the river. Its waters and fertile silt resulted in floodplains and eventually agricultural production enabling the local Laotians to establish *baan*. Their traditional components in a *baan* include the living area and working area, and serves purposely for the local community. In this design, the programmatic components in a traditional *baan* system will be further enhanced with new urban/modern elements that aim towards not only the existing or local villagers, but also the city dwellers and other visitors from elsewhere. This urban village community will be made up of mixed-used destinations that offer many things to do. These programmatic components will include:

- Agriculture/Fishing – the main key driver of the *baan* system that provides not only food, educational and job opportunities, but also promotes health and wellness, eco-tourism, economic production, and environmental awareness
- Residential – a diverse mix of low density and low-rise housing
- Commercial – retail and services that caters for different users
- Hospitality – eco-tourism, leisure and entertainment comprising a range of activities that attracts all users from the local community, city dwellers, and tourists
- Recreation – recreational fields such as athletic fields, sports and family facilities that promote health, well-being and physical exercise
- Parks, esplanade/promenades and avenues – museums, exhibitions, halls, public restrooms, boulevards, river walks, public and open parks, and recreational bio-diversity parks that will act as both economic drivers and a means of off setting the carbon footprint in the city
- Education/Academics – educational opportunities for both the local and international students; to experience a day on a wet-rice field, parks, or other hands-on water education, water conservation, land-use practices, and appreciation for the natural environment

- Mixed-Used – creating a local sense of place with housing, commercial and businesses options for diverse building types

- Civic and Centers – neighborhood boards and centers, Buddhist temples, transit centers, harbors, employment centers, parking, etc.

The relationship of the living area and working area is essential in a traditional *baan* system. The proximity of the two components is customized for walk-ability and the convenience, safety and comfort. As the local idea suggested, the residential area in Don Chan will be best near the working area which refers not only near the agricultural landscape but also mixed-use and commercial area. It is also critical that the residents have easy access to public parks, open spaces, boulevards and recreations. However, it is undesirable for the residential and hospitality to be near one another. The tourists would like to have their privacy while the local residents on the other hand would love a peaceful and quieter atmosphere.

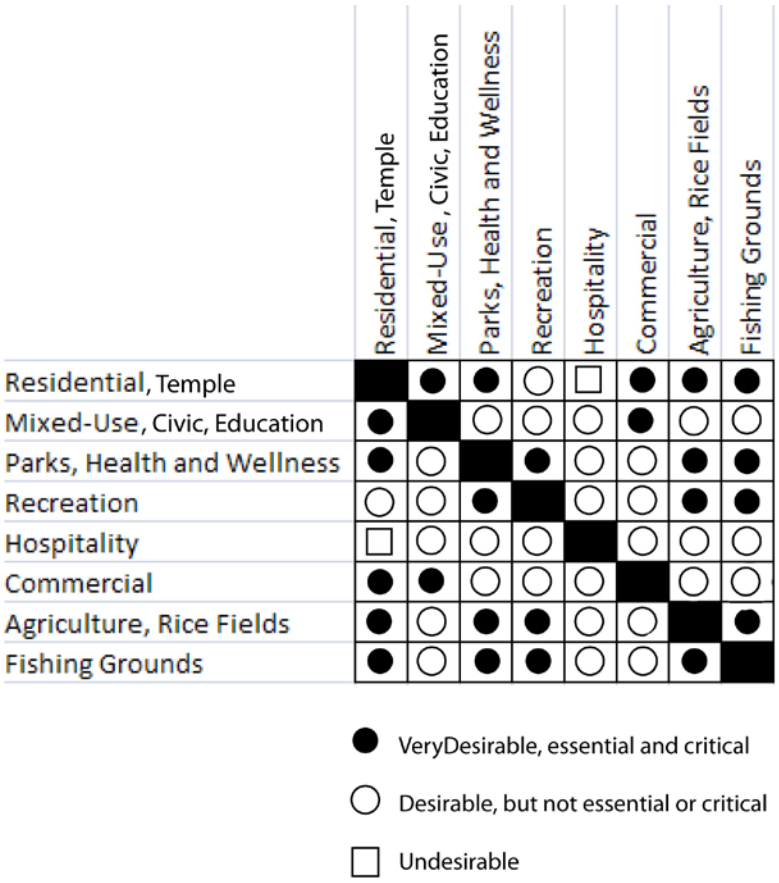



**Figure 7.1**: Programmatic-Adjacency Studies. *Source*: "Siphathay Phanphengdy."

### *Urban Strategies*

*Network Village*

The urban *baan* of Don Chan is a network of different spaces with individual characters and drivers. Each individual driver works together in a network that revolves around the concept of water-land geography creating a livable, workable, and playable environment in the *baan* system. For instance, agricultural and fishery products can be sold in the commercial department while eco-tourism in the hospitality industry centers on educating visitors about the natural phenomenon in land formation and providing funds for conservation and revenue for the local population. Recreation can be both land and water-oriented activities such as swimming, fishing and waterskiing, which revolves around the river. The river also offers water transportation routes as an alternative idea for easy accessibility and movement while reducing vehicular traffic congestions. The river and its openness will also enhance public parks and public spaces by offering relaxation and amazing views

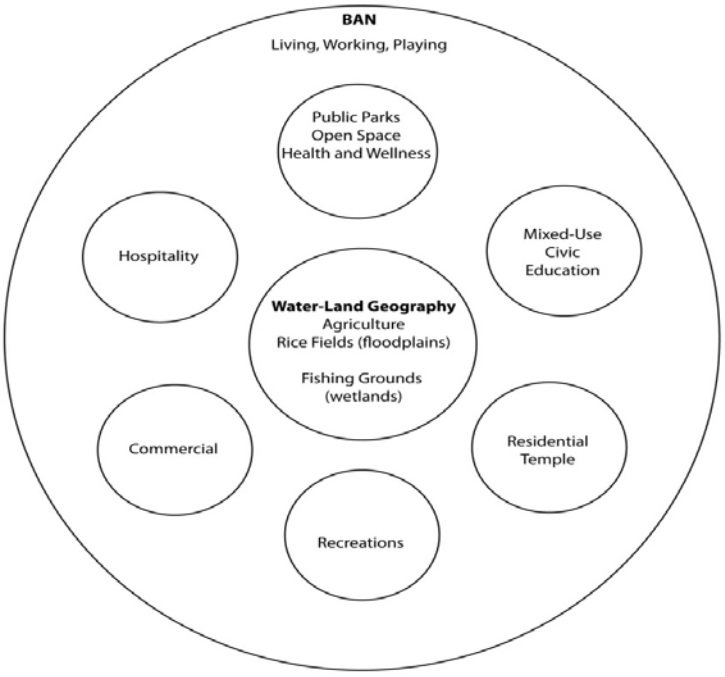



**Figure 7.2**: Network village bubble diagram.
*Source*: "Siphathay Phanphengdy."

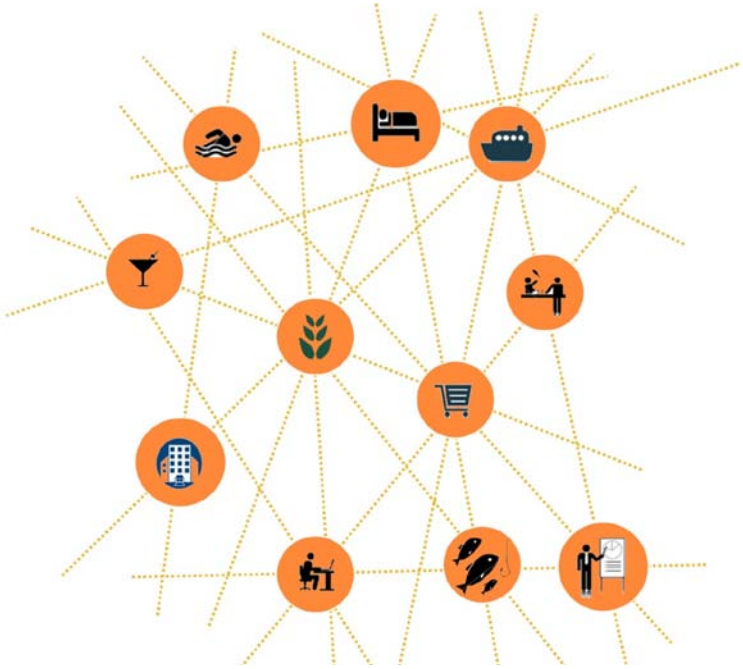


**Figure 7.3**: Network village diagram.
*Source*: "Siphathay Phanphengdy."

of the water and its agricultural landscape. Then ultimately, the local residents can benefit from the recreational and job opportunities resulted from the Mekong River.

*Baan with Open Spaces*

The primary aim for the urban village of Don Chan is to create a self-sustained village that integrates both modern methodologies/technologies and traditional way of lifestyle that revolves around the Mekong River, its waters and its floodplains. Ranging from agriculture and fishing to eco-tourism and businesses using the river as its base, the village can maintain a healthy way of life with various jobs and lifestyle opportunities. The village can be further characterized by open spaces and agricultural spaces that provide an opportunity for relaxation, recreation, social interaction and the appreciation of the natural and built environment. They also provide opportunities for bio diversity, and can help offset the heat island effect of high-density urban environments.

Open spaces and parks provide an oasis of calmness that can be contrasted with the hustle and bustle of urban centers, or opportunities for recreation in the interests of promoting health and well-being. The combination of heat and humidity in the city of Vientiane can be quite hot and very uncomfortable, especially during the dry season. The increase of greenery and tree coverage by ten percent can help reduce surface temperatures of a town between 3-5 degrees centigrade.[100] With the help of the Mekong River and its waters, the open spaces maximizes natural cooling and natural ventilations. The new urban will be cooled from the river breezes during the day and land breezes during the evening. According to Lechner, the author of "Heating, Cooling, Lighting: Sustainable Design Methods for Architects", the temperature differences between land and water create sea breezes during the day and land breezes at night.[101] Cooling and air conditioning in buildings of Don Chan can be reduced or yet mostly be replaced by this natural cooling phenomenon.

Green open spaces come in different sizes and functions. They can be designed to incorporate specific uses such as plazas and promenades to link major uses and destinations,

[100] CABE, Hallmark of a sustainable city 2009, 19.
[101] Lechner 2009, 74.

outdoor sports facilities, playing fields, range of children's informal recreation pursuits, court games, nature conservation areas, shaded seating and picnic areas in city parks and district parks. Furthermore, the design goal is to promote environmental sustainability and education in parks and public spaces. Don Chan's urban village has obscured its connections to the natural environment. More nature in the city such as more trees and planting in parks and other areas will be accompanied by more support for conservation areas and environmental education, as well as sustainable management practices. For instance, planting large trees around a building, particularly in the west facing façade, can help reduce the amount of energy being used for cooling the building.

*More Ways to Experience the River*

Laotian's genesis and identity are inextricably linked to its tropical water and its rivers. The specific characteristics of Don Chan transcend the traditional differentiation between nature, culture and considering all the existing factors as part of the nature/culture basis. For instance, agriculture and fishing are part of the traditional Lao lifestyle. It is essential to have a scheme that adapts and respond to the monsoon cycle, its culture and its surroundings, without losing its own identity. The objective for the design is to enhance and ensure public access to the river, its floodplains and its waters. Everyone wants more and better access to the Mekong River and to the cooling effects of water, its rich fertile silts and fishing. As a result, the new urban village of Don Chan will be utilizing the productive floodplains for agriculture and growing crops in the dry season from October to late April. Once the floodplains become wetlands due to the rising water during the wet season from May to late September, the users will be benefited from fisheries and using the water for other leisure purposes.

Furthermore, the significant pedestrian and vehicular connection between the city of Vientiane and Don Chan will be increasingly important in the future. It is wise to have a design scheme that focuses on a flood controlling system such as floodgates like sluice or miter gates, to revitalize waterways as an alternative transportation route. The gates will not only control the water level as the river rises, but also will promote contrasting ideas of this water phenomenon between the natural and the built controlled environment. It is feasible that the site is accessible both by land and water transportation.

***Design Process and Evolution***

Keeping the ideas of networking village with open spaces and more ways to experience the river, the design begins by exploring various land formations and ways to connect to the adjacent city of Vientiane. Because the location of the site is close to the Mekong River, the fluctuation of water levels is one of the important design criteria in this project. The diagram below shows different water levels and its relationship to the Vientiane community (*Figure 7.4*). It indicates that the design must respond and adapt to the flood cycle. In addition, the settlement of Vientiane city shows more rigid and denser development than the Thai city across the river. The adjacency to the river presenting a linear shape in relation to the river orientation suggests that the design must include a road network system that also runs parallel to the river.

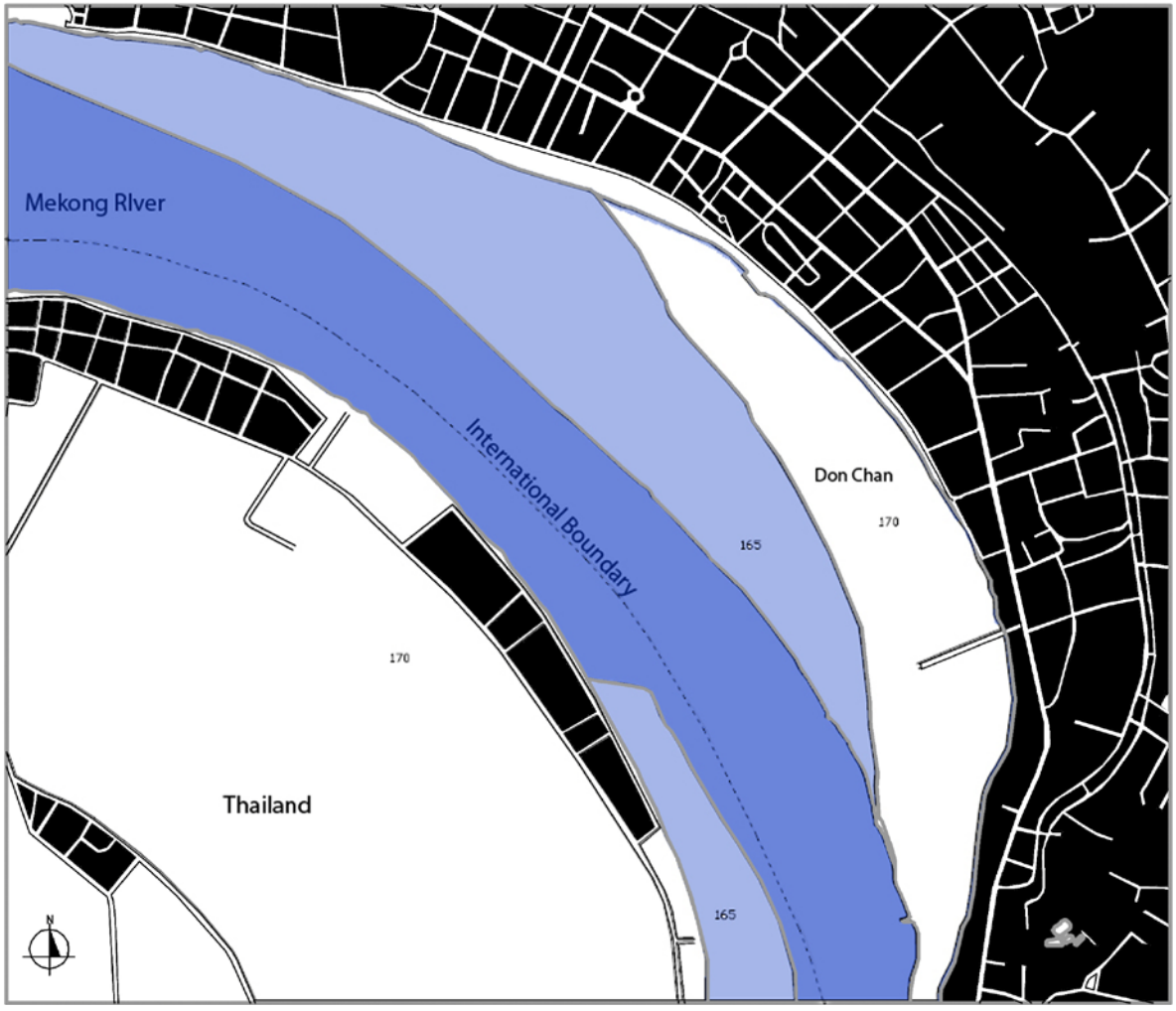



**Figure 7.4**: Water fluctuation diagram in macro scale. *Source*: Done by "Siphathay Phanphengdy."

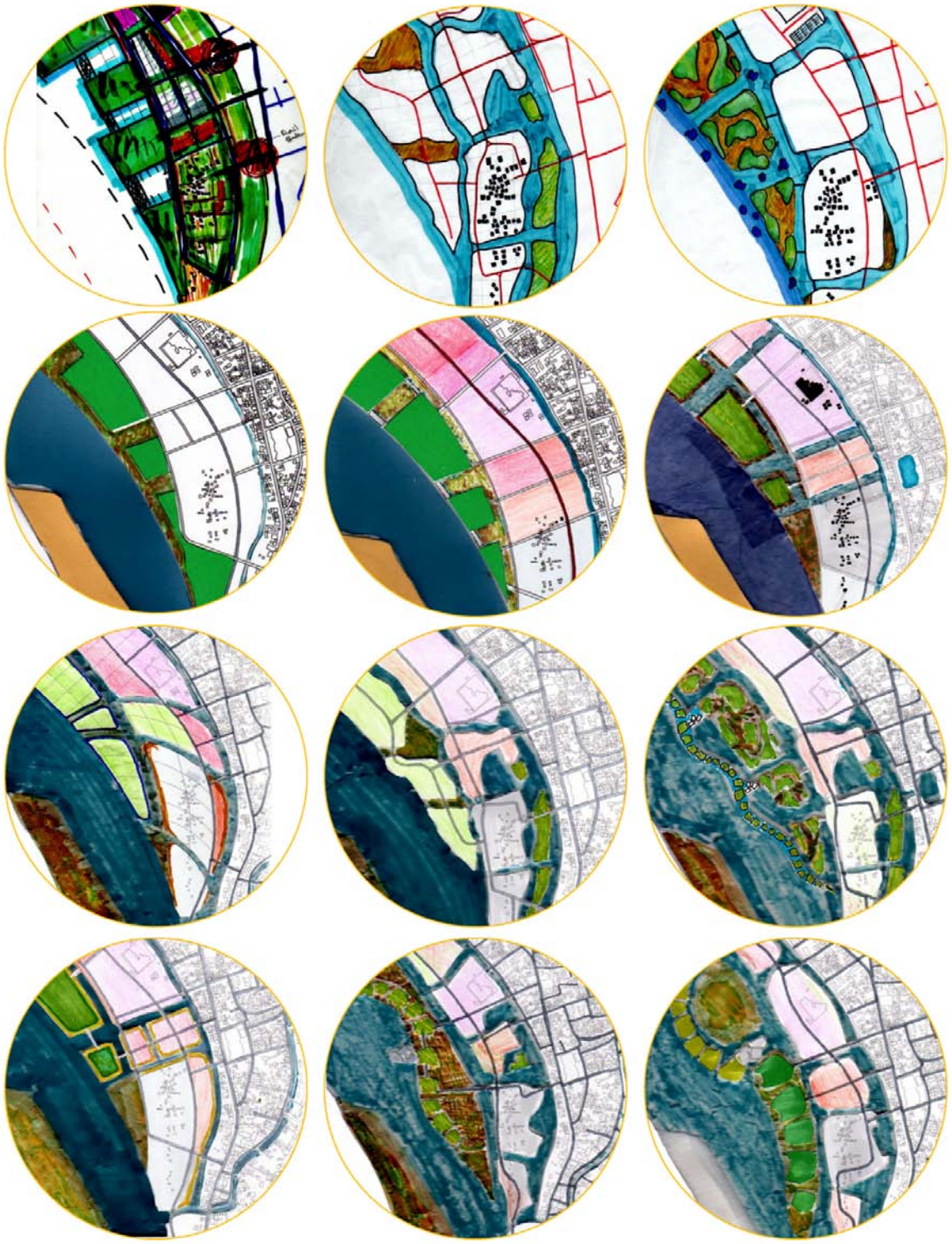
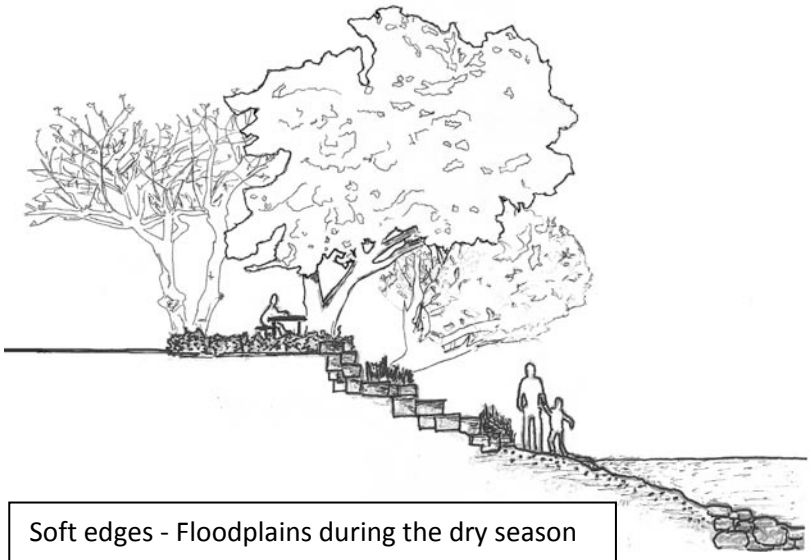


**Figure 7.5**: Design Evolution
*Source*: Done by "Siphathay Phanphengdy."

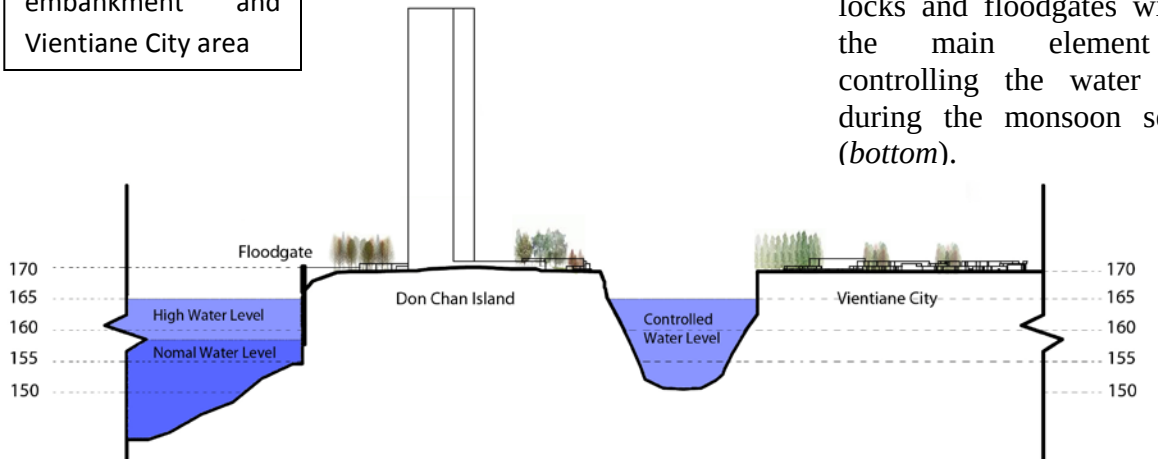
**Figure 7.6**: Conceptual Sections – investigating and establishing an architectural language for the edges between land and water. *Source*: by "Siphathay Phanphengdy."

Soft edges - Wetlands during the wet season



Soft edges - Floodplains during the dry season

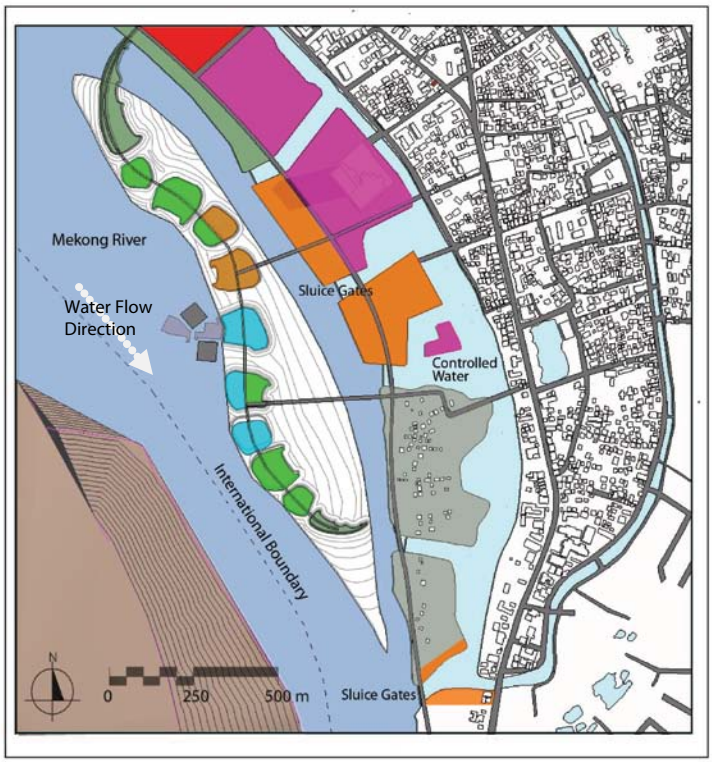
Hard edges along the embankment and Vientiane City area




One of the approaches in dealing with the relationship between the land formation and the river is to create soft edges in the design, particularly in the area of the floodplains and wetlands. Instead of hard edges such as in many urban waterfront developments, these soft edges and its formation will changes overtime due to the river condition and the monsoon season. Since the flow of the Mekong River changes and is never constant, the idea of having soft edges around the site responds naturally to this phenomenon (*left*).

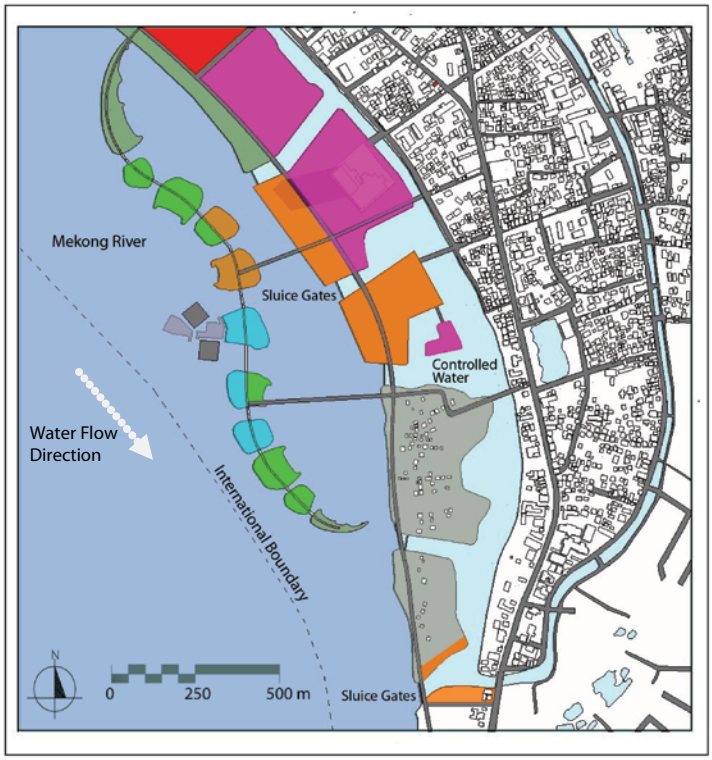
Along with soft edges around the floodplains, the design will also consider hard edges such as embankments or dikes around the inner portion near the city of Vientiane for flood control. The use of canal locks and floodgates will be the main element in controlling the water level during the monsoon season (*bottom*).

**Figure 7.7**: Design Scheme 1 – Site Plans
*Source*: "Siphathay Phanphengdy."




Intervention (Dry Season)
- Agricultural and Rice Fields (Floodplains)
- Residential
- Mixed-use
- Heath and Wellness, Public Parks
- Recreations
- Hospitality
- Commercial

This design scheme introduces a canal system that allows water to be utilized, allowing the user to move around the site easily by water routes while connecting Don Chan to the inner city of Vientiane. There are two types of land formations: the inner islands with hard edges and the outer islands with soft edges. These floodplains and soft edges appear to form naturally by the river that flows inconsistently from north to south during the dry season from April to October.




Intervention (Wet Season)
- Fishing Grounds (Wetlands)
- Residential
- Mixed-use
- Heath and Wellness, Public Parks
- Recreations
- Hospitality
- Commercial

As the water level rises, the floodplains submerge underwater making the outer islands appear to float on the river while the water level in the inner islands are controlled by the sluice gate system. The inner islands also act as flood protection for the inner city while the outer islands are formed in a curvilinear orientation to protect the inner islands from strong current. Furthermore, these outer islands also protect the agricultural landscape from the strong current during the dry season.

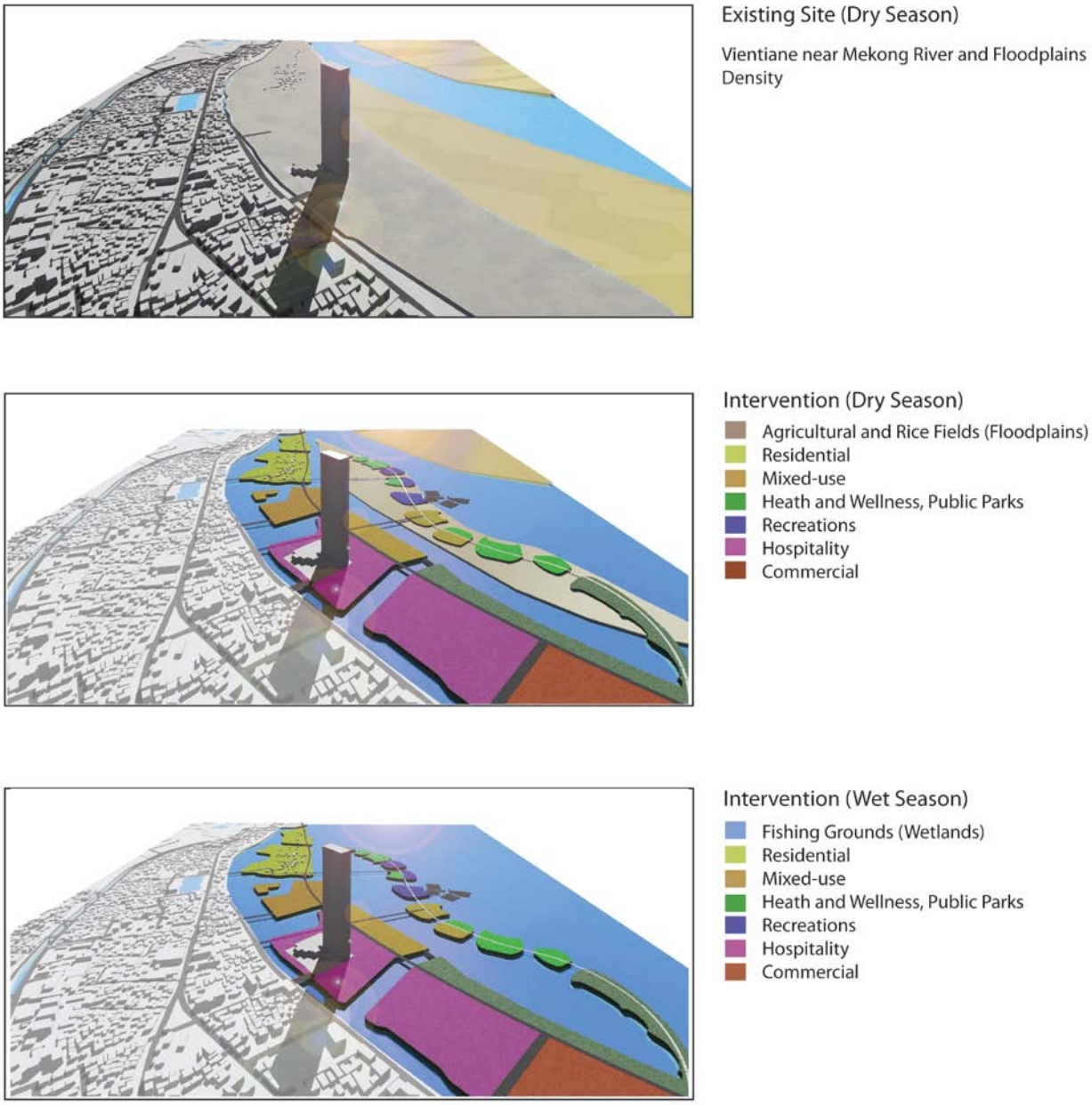



**Figure 7.8**: Design Scheme 1 – Program and Conceptual Visualization
*Source*: "Siphathay Phanphengdy."

In this design scheme, the soft edged outer islands sit on the existing floodplains that eventually will become agricultural landscape during the dry season. This outer belt chain is situated in a way to slow the strong current protecting the inner islands and its floodgates. At the same time, these inner islands are also designed to protect the city from flooding. The programmatic functions are organized in a hierarchy structure from local users to tourists/visitors. The inner area of the existing Don Chan Palace hotel and its adjacent spaces aim more towards visitors and city dwellers while to the south of that is a little bit more private, particularly in the residential area with the existing village.

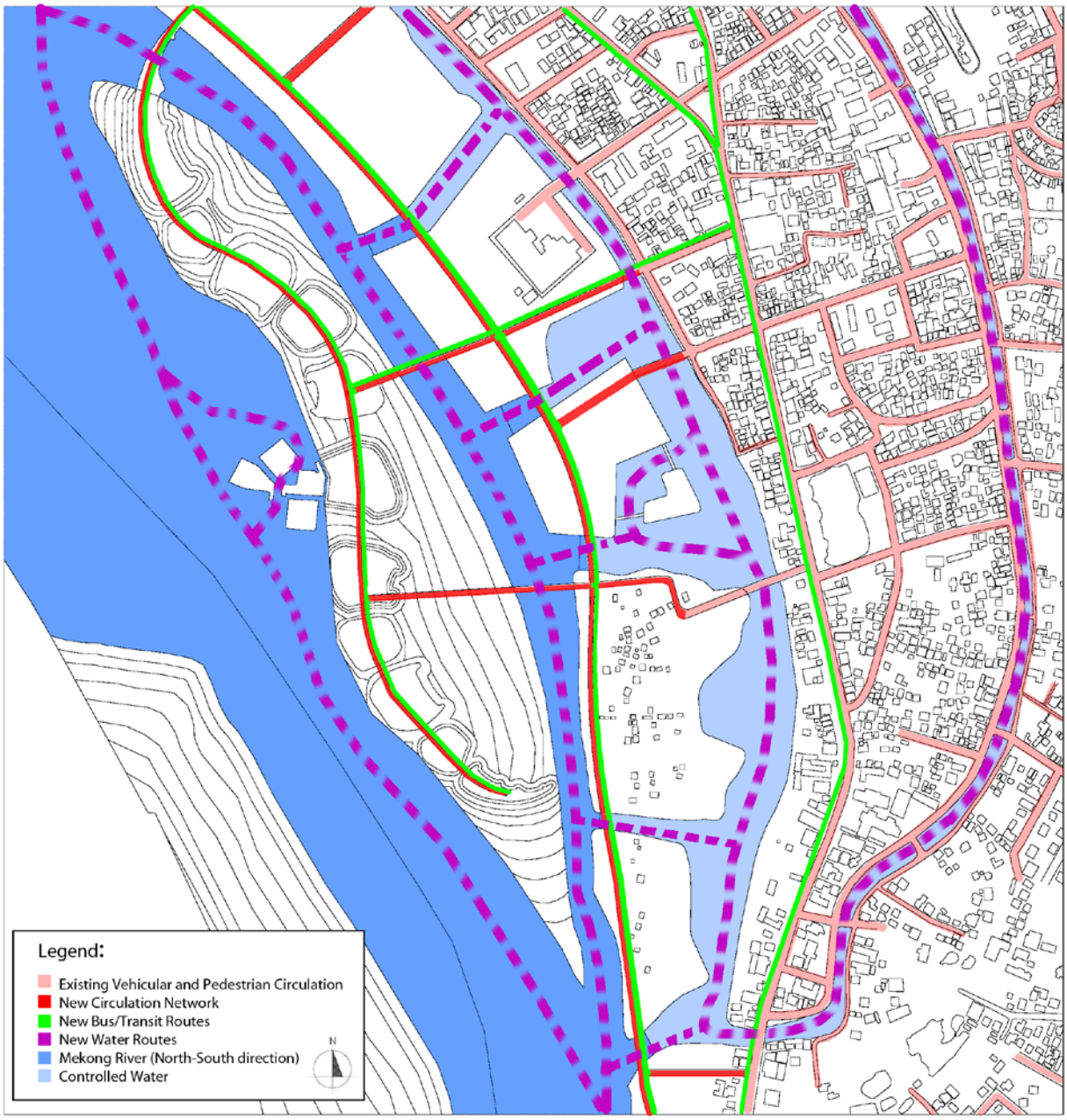



**Figure 7.9**: Design Scheme 1 – Circulation Network in the Dry Season
*Source*: "Siphathay Phanphengdy."

The design is linked with a circulation network that is connected with the existing roads and pedestrian circulation such as sidewalks, pavements and bridges. The design also proposes a new bus network system, which the city does not currently have. The only public transportations that are common are taxis and motorcycles. With the new bus transit network, people will be able to move through the city, and in and out easily through the urban village of Don Chan. Whether one comes from the city or other villages along the Mekong, the site is also accessible by waterways.

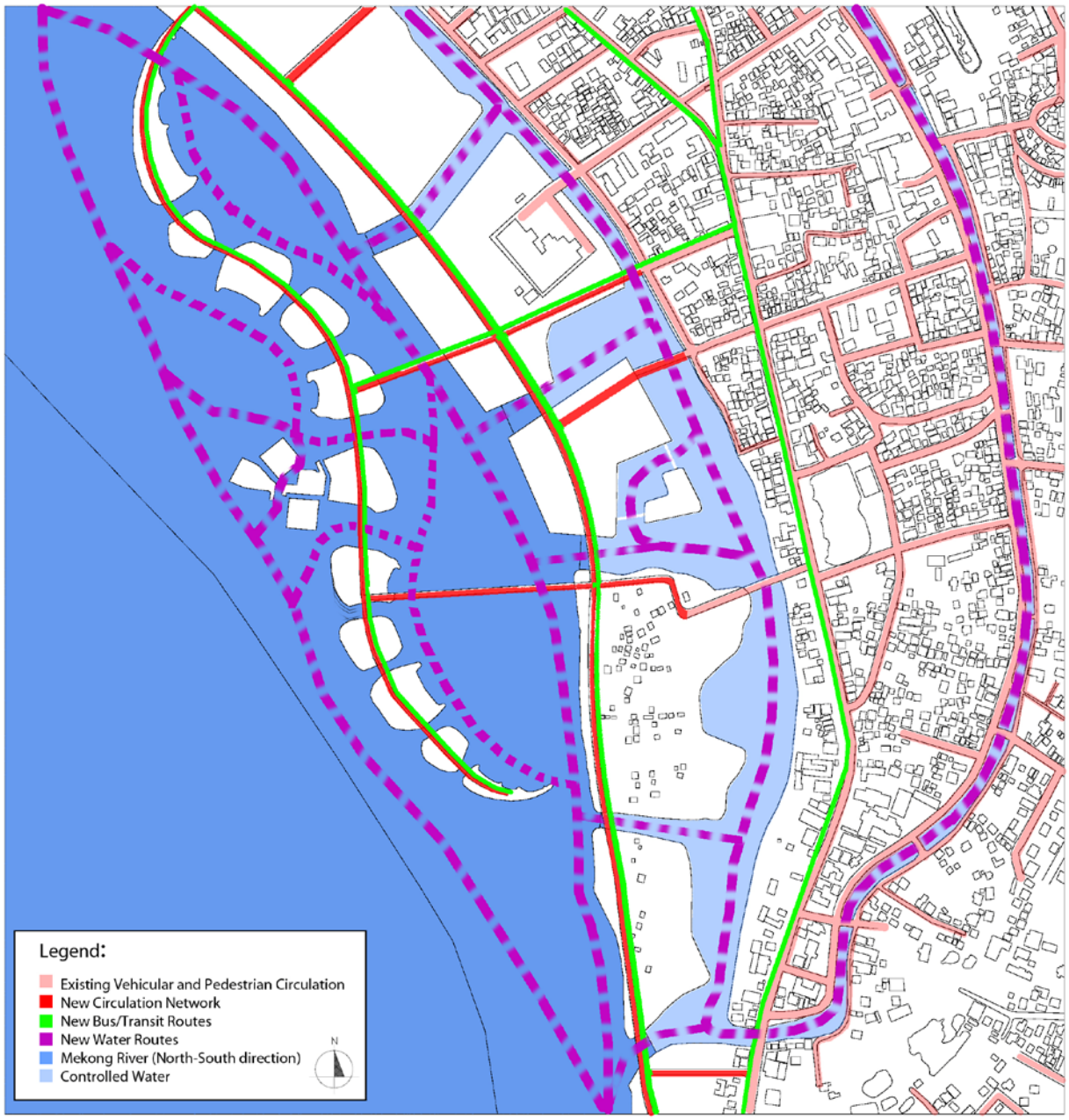



**Figure 7.10**: Design Scheme 1 – Circulation Network in the Rainy Season
*Source*: "Siphathay Phanphengdy."

When the floodplains/agricultural landscape disappear during the wet season due to the rising river, the waterways become widely used. The rising water allows users to move through the site and to the city easily by boats. For those who are afraid of getting wet and prefer land transportation, the bus transit system is there for the public to use. They can also utilize the covered walkways and bridges to fully experience the atmosphere of Don Chan when the weather is sunny.

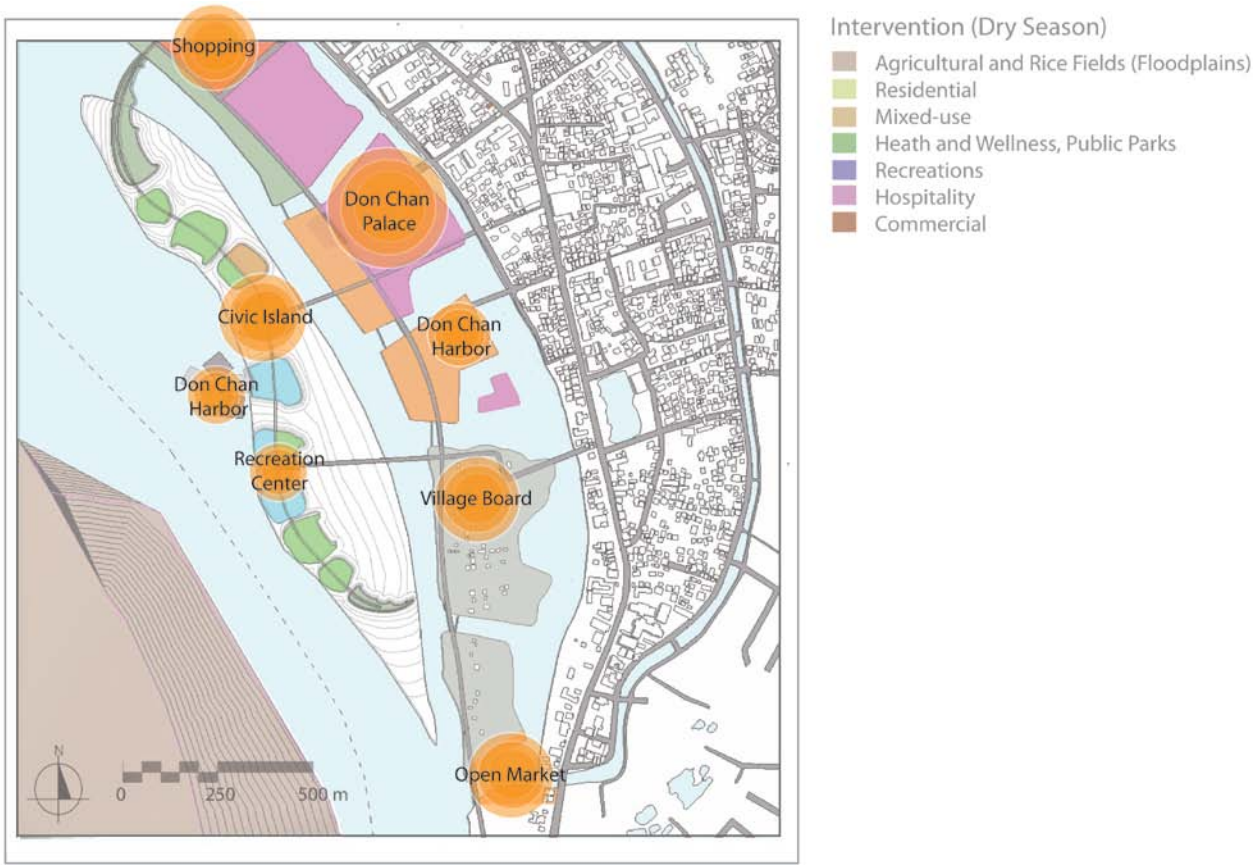



**Figure 7.11**: Design Scheme 1 - Nodes
*Source*: "Siphathay Phanphengdy."

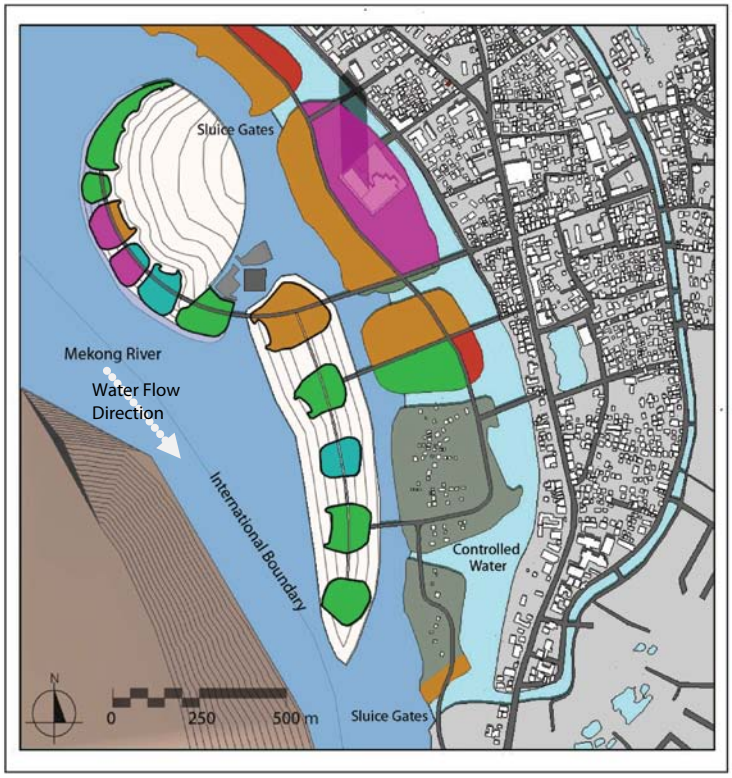
The different nodes are shown conceptually to depict the primary ideas and key development patterns to illustrate a revitalized river experience: a great, prosperous, urban space with a memorable sequence of genuine and vibrant community places and tourist destinations where a mix of uses that celebrates and reflects the city's riverside location, culture, diversity and community spirit.

The combination of all the islands is a network of different open spaces with individual characters or nodes and their own social and economic drivers. These different programmatic nodes are designed to reflect and respond to the Mekong riverside identity of Lao culture, character, economy, civic, tourism, artistry, lifestyle and environmentally conscious community.

With various functional nodes, the design caters an urban community that promotes open spaces and mixed-use buildings with sidewalks that are pedestrian friendly and transit-oriented such as the bus system that attracts and serves both visitors and residents. Each of the eight nodes is proposed to have a unique identity, whether as an open market, recreation, civic, village board, shopping and hospitality.

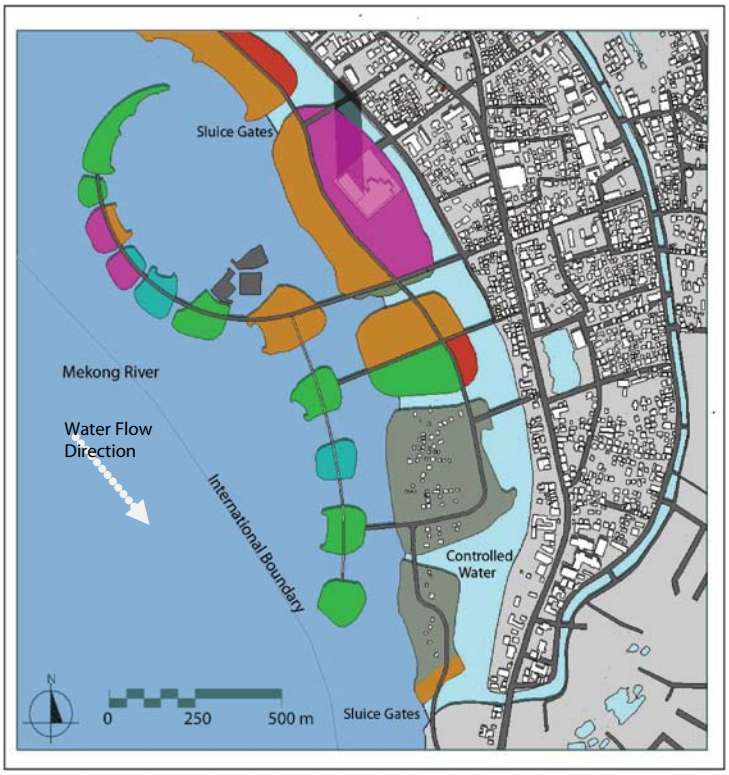

**Figure 7.12**: Design Scheme 1 – Conceptual Sketch
*Source*: "Siphathay Phanphengdy."

**Figure 7.13**: Design Scheme 2 – Site Plans
*Source*: "Siphathay Phanphengdy."




Intervention (Dry Season)
- Agricultural and Rice Fields (Floodplains)
- Residential
- Mixed-use
- Heath and Wellness, Public Parks
- Recreations
- Hospitality
- Commercial

Similar to the first design scheme, this design also intends to protect the city from the river flood by having a canal system and floodgates that maintains the water level and allows water to be utilized for waterways throughout the site and city. Still keeping the ideas of soft and hard edges of inner and outer island chains for further protection, the land formations are shaped in a more organic way than the first scheme, particularly for the inner islands.




Intervention (**Wet**Season)
- Fishing Grounds (Wetlands)
- Residential
- Mixed-use
- Heath and Wellness, Public Parks
- Recreations
- Hospitality
- Commercial

Having the outer islands on the natural floodplains allows them to appear as if they are floating during the rainy season. The upper portion of the outer islands forms a large scale of agricultural landscape during the dry season, which allows users to have an open view of the green landscape and the river on the opposing side. One can experience both the water and the agricultural landscape at the same time. Don Chan will also be connected to the city by both road network and water routes.

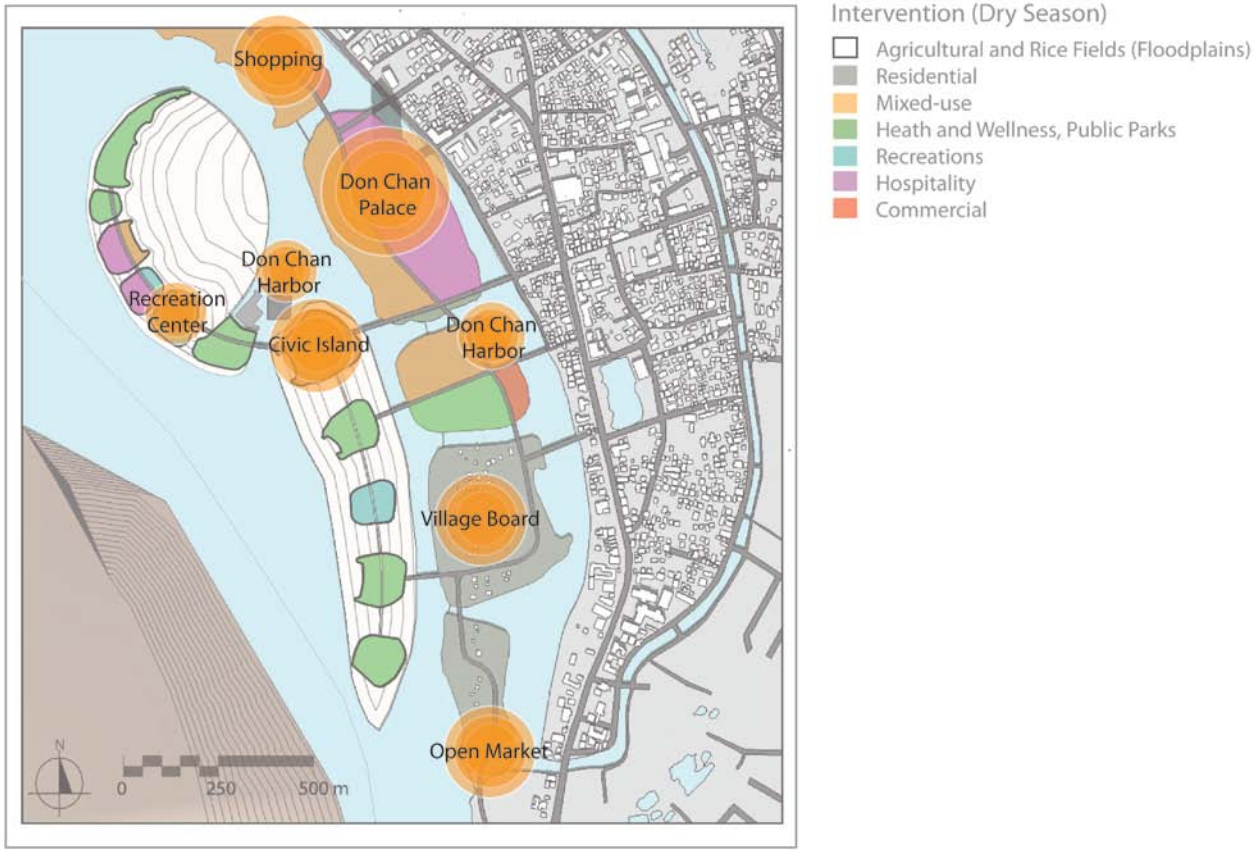



**Figure 7.14**: Design Scheme 2 – Nodes
*Source*: "Siphathay Phanphengdy."

Like design scheme 1, the islands act as a network of different open spaces with their own distinct characters and nodes. The intervention of using the outer chain of islands on top of the floodplains and utilizing it to grow rice and vegetables in the dry season and fishing during the wet season, which is an important part of their diet, enables the Don Chan residents to continue with their traditional lifestyle.

The open market, one of the nodes nearby the village or residential area also allows the villagers to sell their fish or agricultural products at the market. The residents will also have the opportunity to live near their work places including the different businesses on the civic island, recreation centers, hotels and restaurants. Keeping the existing Don Chan Palace hotel and the existing Don Chan village (village board node) allows the design to preserve and acknowledge its cultural purpose as the community's history. As a result, the adjacency of these different nodes defines the central focal point for the community's everyday activities.

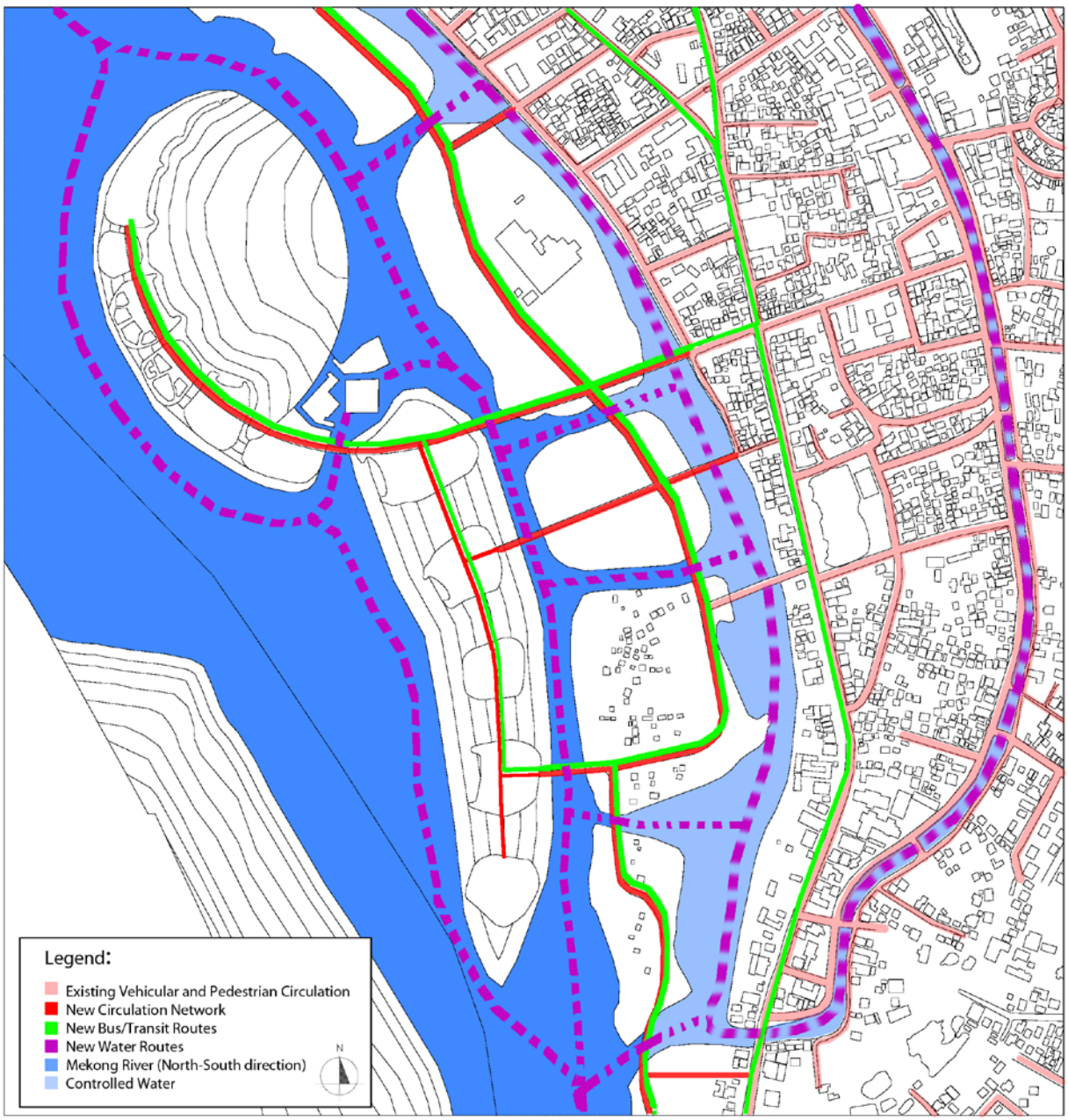



**Figure 7.15**: Design Scheme 2 – Circulation Network in the Dry Season
*Source*: "Siphathay Phanphengdy."

All the islands are connected as a network that works together and is linked through a circulation system that includes waterways, bridges, and roads/walkways. The design allows the site to be accessible both by land and water routes. Many of the new vehicular roads that are connected to the inner city of Vientiane allow easy access for the city dwellers. Similar to design scheme 1, the bus transit system will also be the main artery for public land transportation. Providing public transportation options by land and water will help reduce the amount of traffic congestion and carbon dioxide that contribute towards global warming.

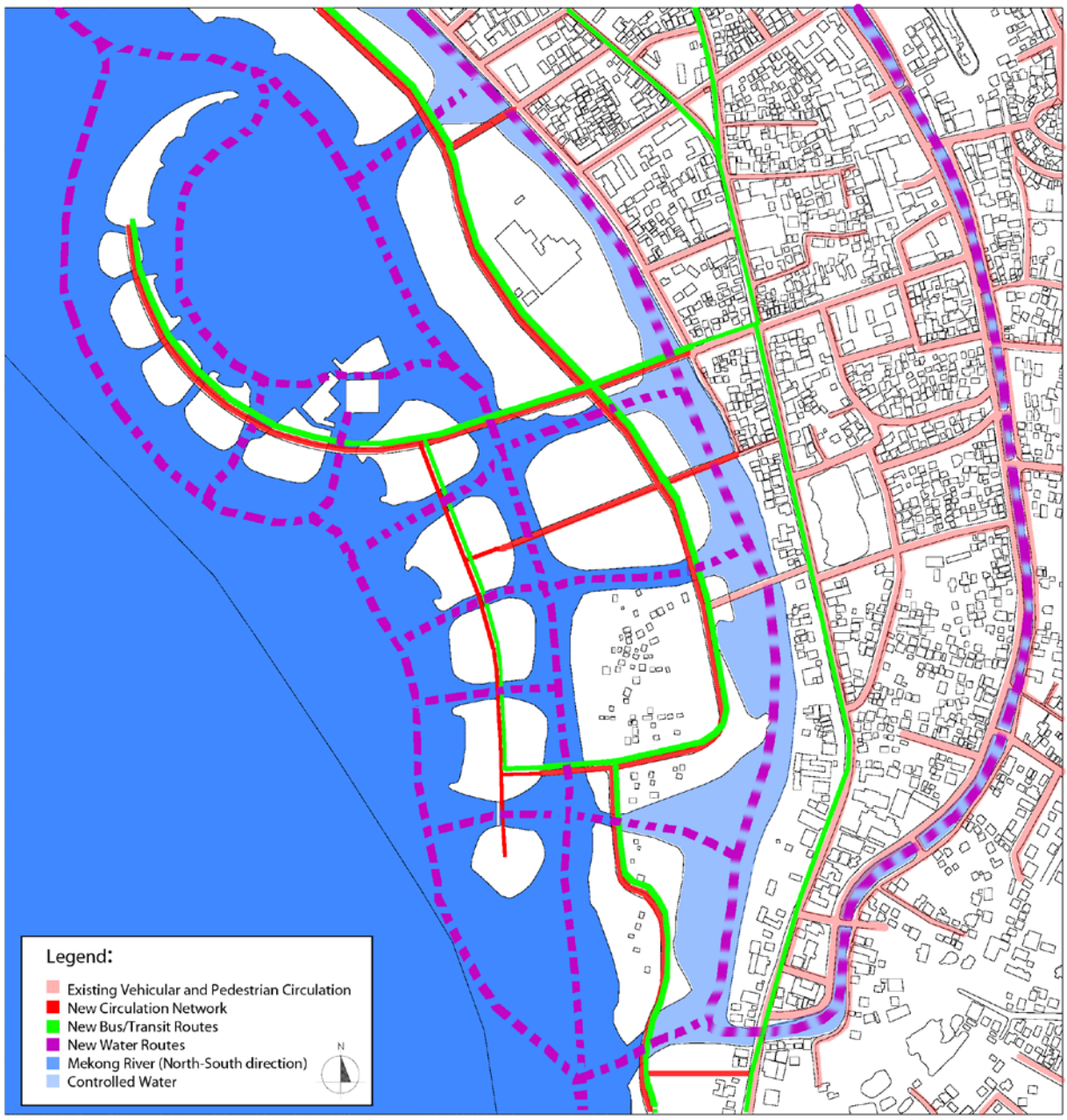



**Figure 7.16**: Design Scheme 2 – Circulation Network in the Rainy Season
*Source*: "Siphathay Phanphengdy."

Like design scheme 1, the islands appear to float while the agricultural landscape disappears due to the rising river. As the water rises, the waterways become expanded allowing people to move freely through the site by boats. The open river and water routes behind the inner islands also allow people to access the site by boats with the help of the flood-controlled system that responds to fluctuation of the Mekong River.

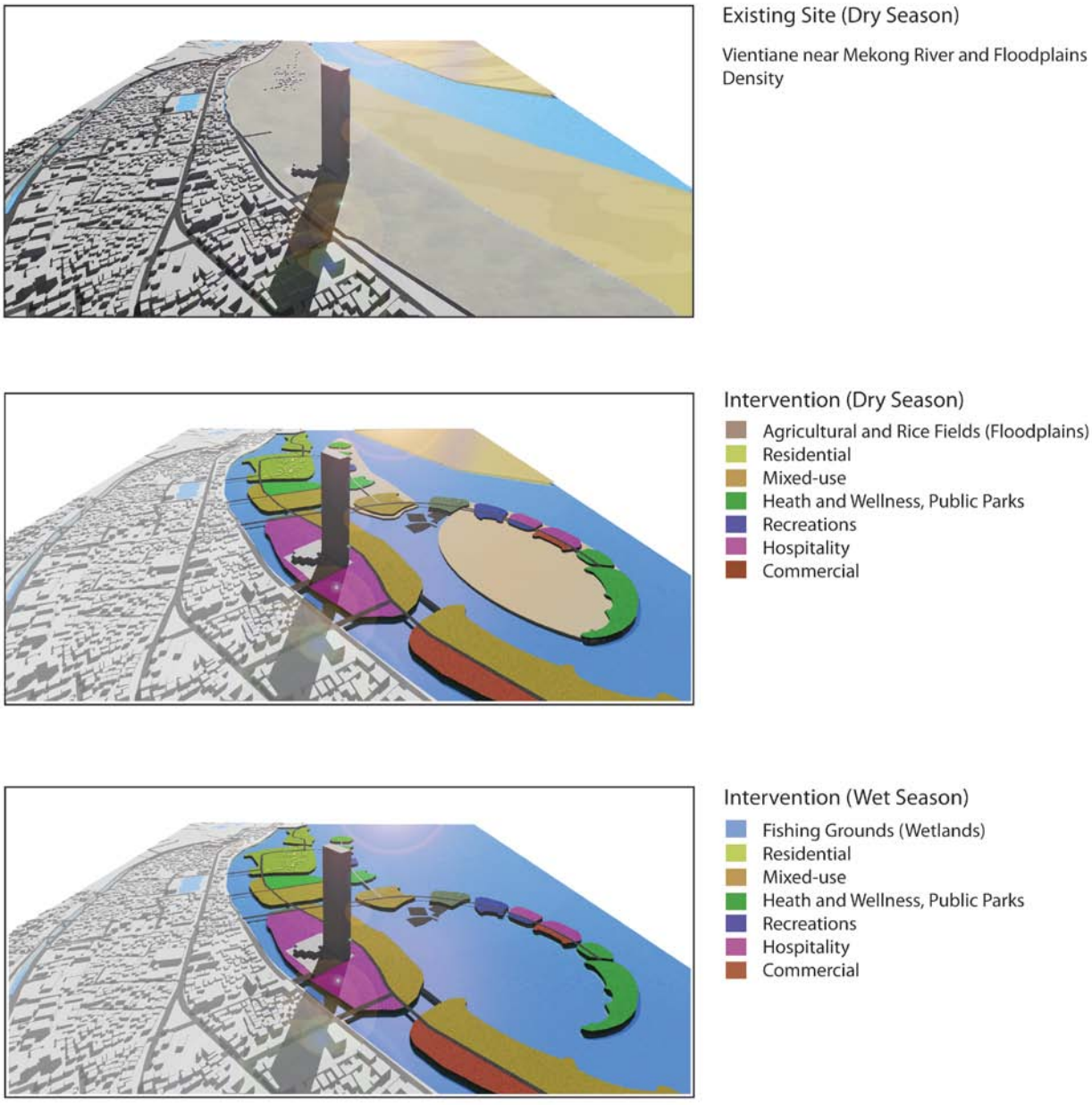



**Figure 7.17**: Design Scheme 2 – Program and Conceptual Visualization
*Source*: "Siphathay Phanphengdy."

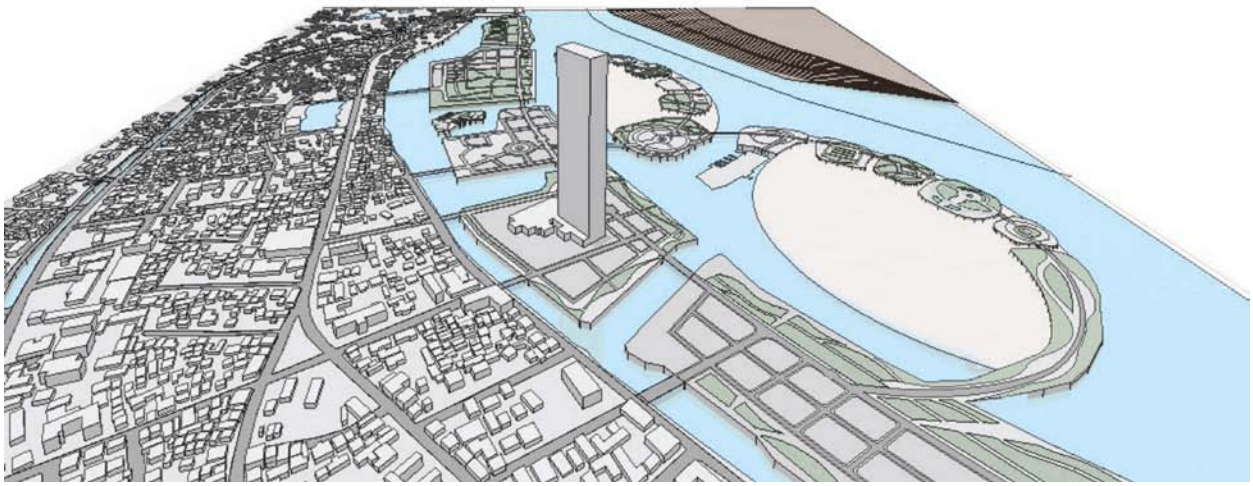
The main reason for the outer islands organized in a curvilinear formation is due to its functions of the floodplains/agricultural landscape. It makes sense that the islands form a protection for the agricultural landscape preventing land erosion from the strong current. The shapes of the inner islands are organic and act as a wall of protection of transitional space between the city and the river. The thought of organic shapes is behind the ideas of the inconsistency or nature of the water since the river and its floodplains always change and are never constant.


**Figure 7.18**: Design Scheme 2 – Conceptual Sketch
*Source*: "Siphathay Phanphengdy."

**Figure 7.19**: Design Scheme 3 – Site Plan during the Dry Season
*Source*: "Siphathay Phanphengdy."

**Figure 7.20**: Design Scheme 3 – Site Plan during the Wet Season
*Source*: "Siphathay Phanphengdy."

**Figure 7.21**: Design Scheme 3 – Land Formation Rendering Studies
*Source*: "Siphathay Phanphengdy."



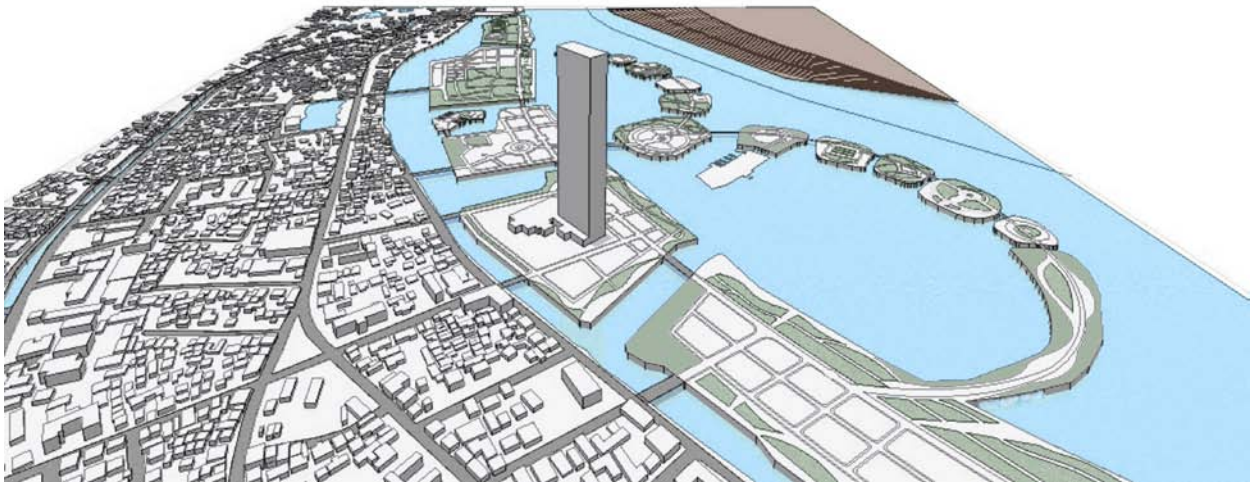


**Figure 7.22**: Design Scheme 3 – Land Formation Rendering Studies
*Source*: "Siphathay Phanphengdy."

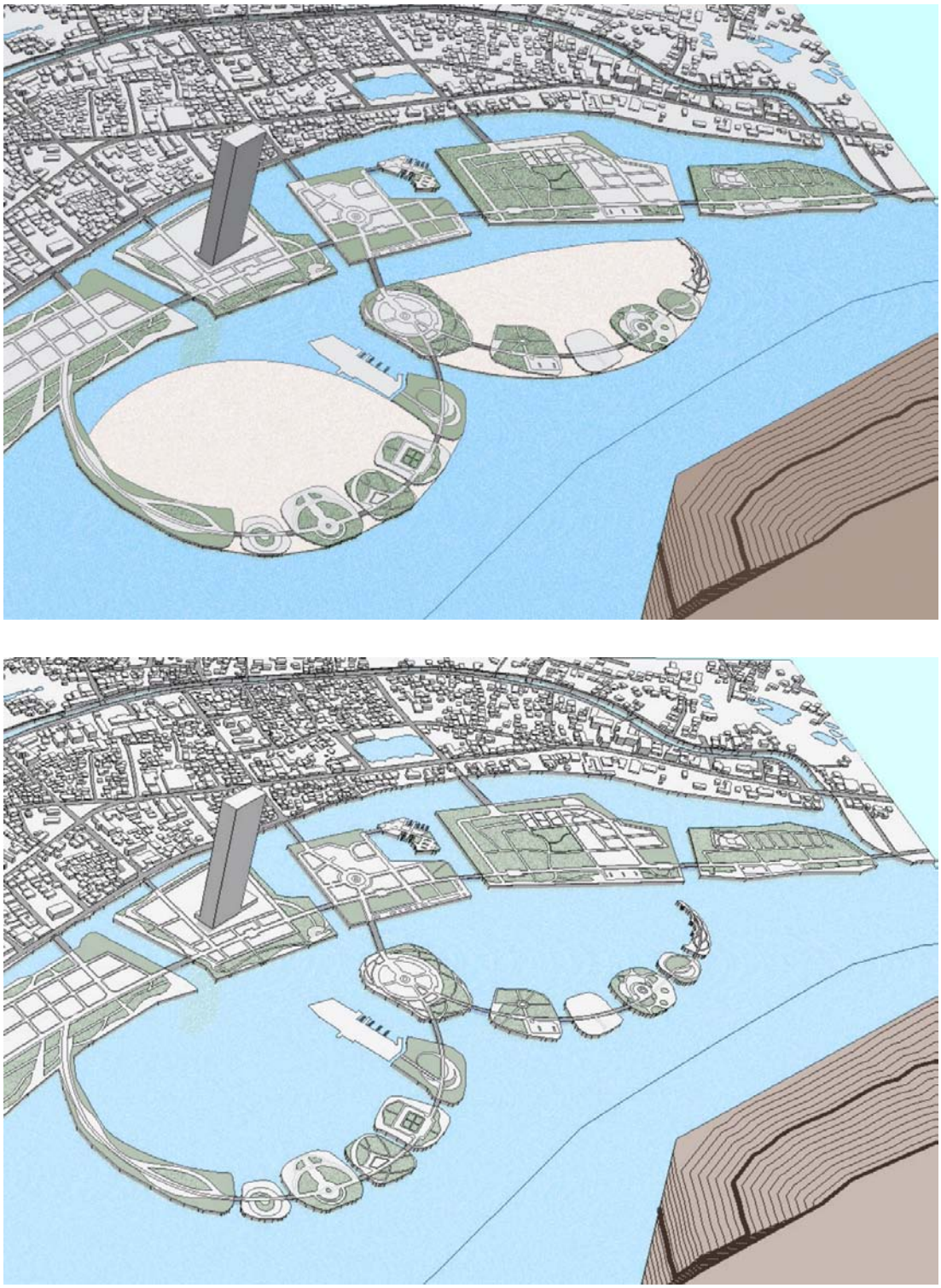
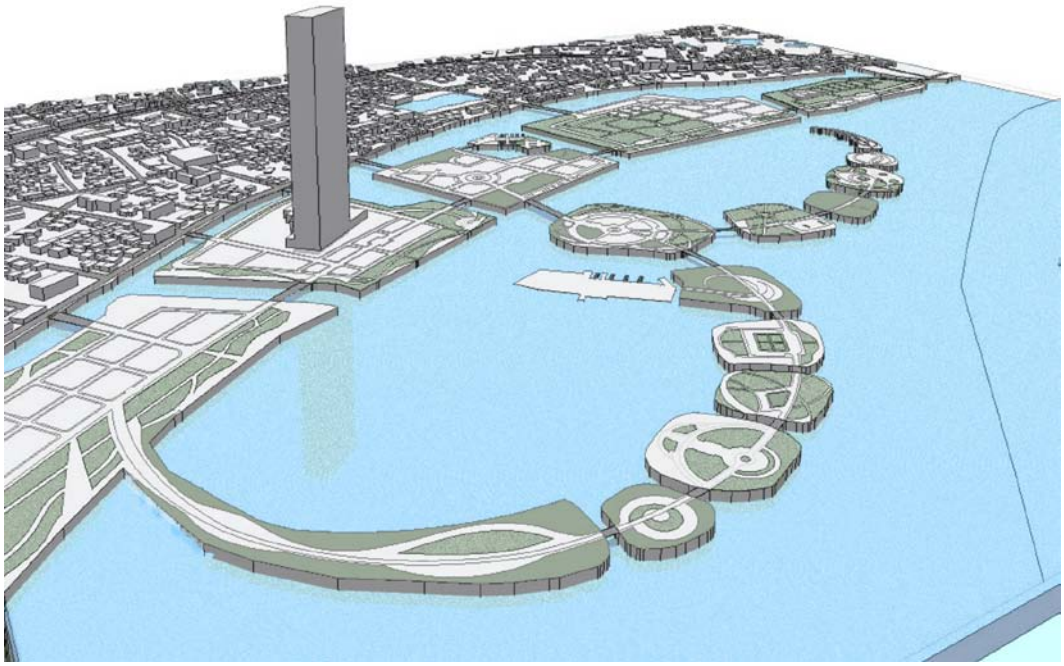


**Figure 7.23**: Design Scheme 3 – Land Formation Rendering Studies
*Source*: "Siphathay Phanphengdy."



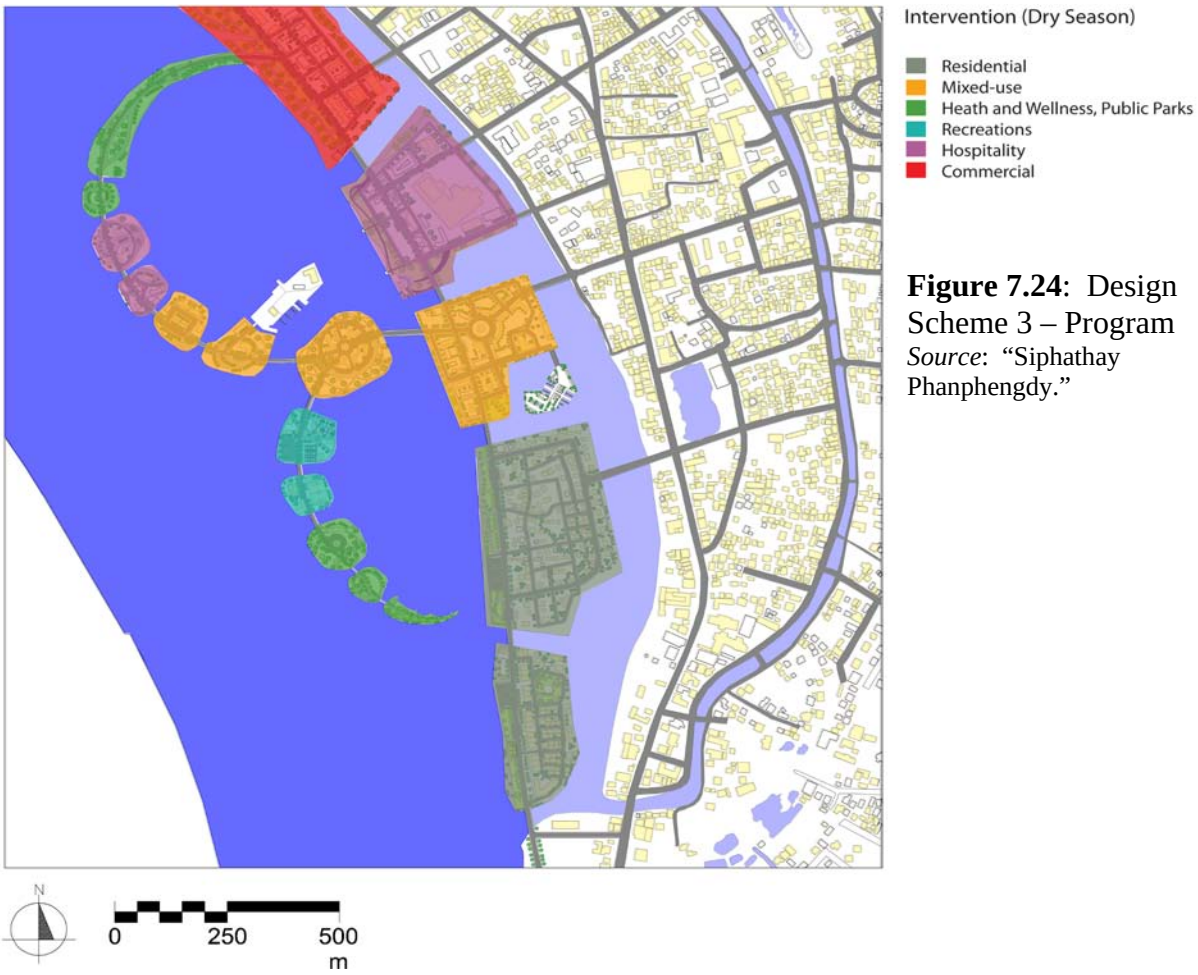



**Figure 7.24**: Design Scheme 3 – Program
*Source*: "Siphathay Phanphengdy."

**Figure 7.25**: Design Scheme 3 – Visualization
*Source*: "Siphathay Phanphengdy" with the help of Google Earth.

**Figure 7.26**: Design Scheme 3 – Circulation Network in the Dry Season
*Source*: "Siphathay Phanphengdy."

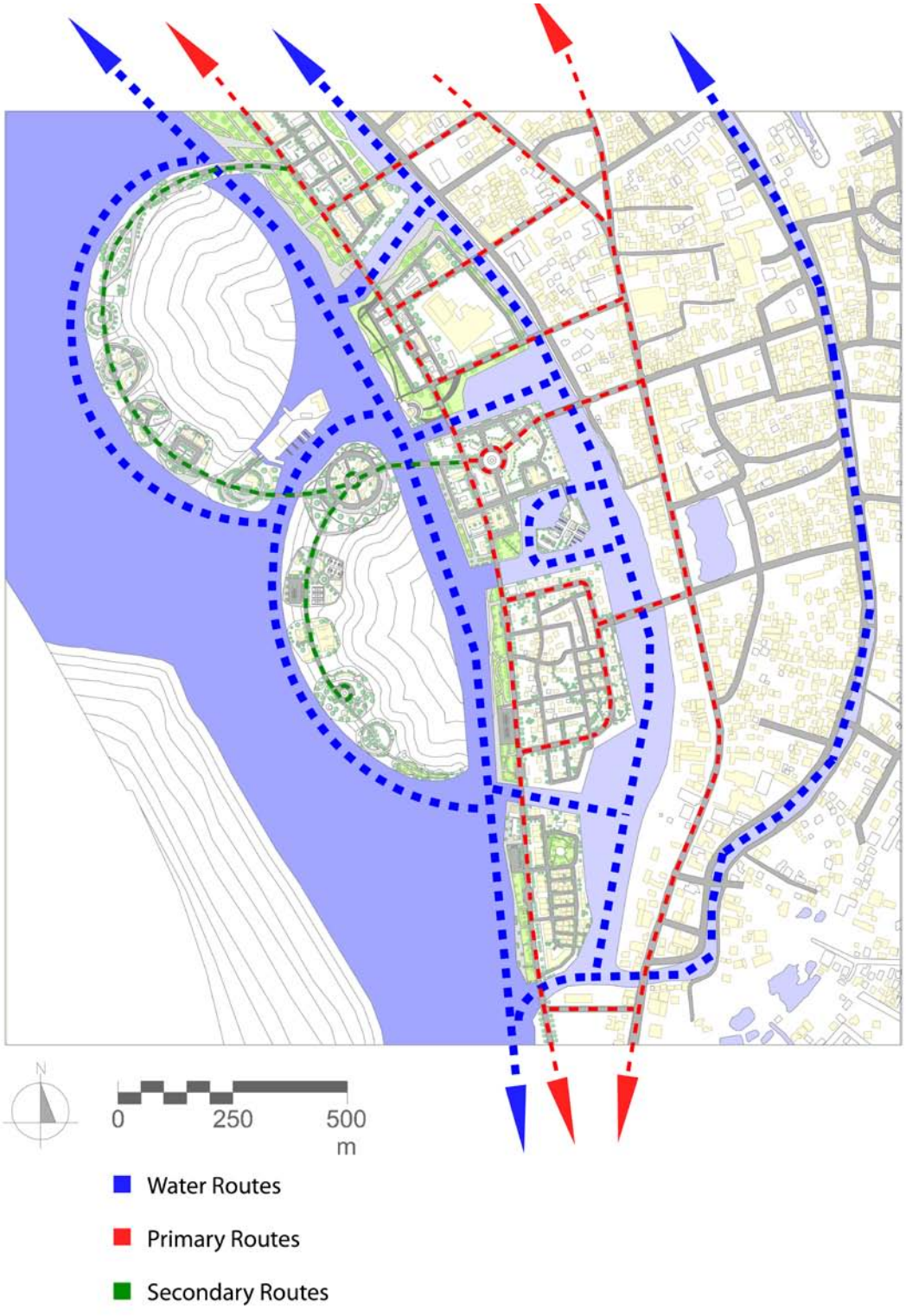


**Figure 7.27**: Design Scheme 3 – Circulation Network in the Wet Season
*Source*: "Siphathay Phanphengdy."

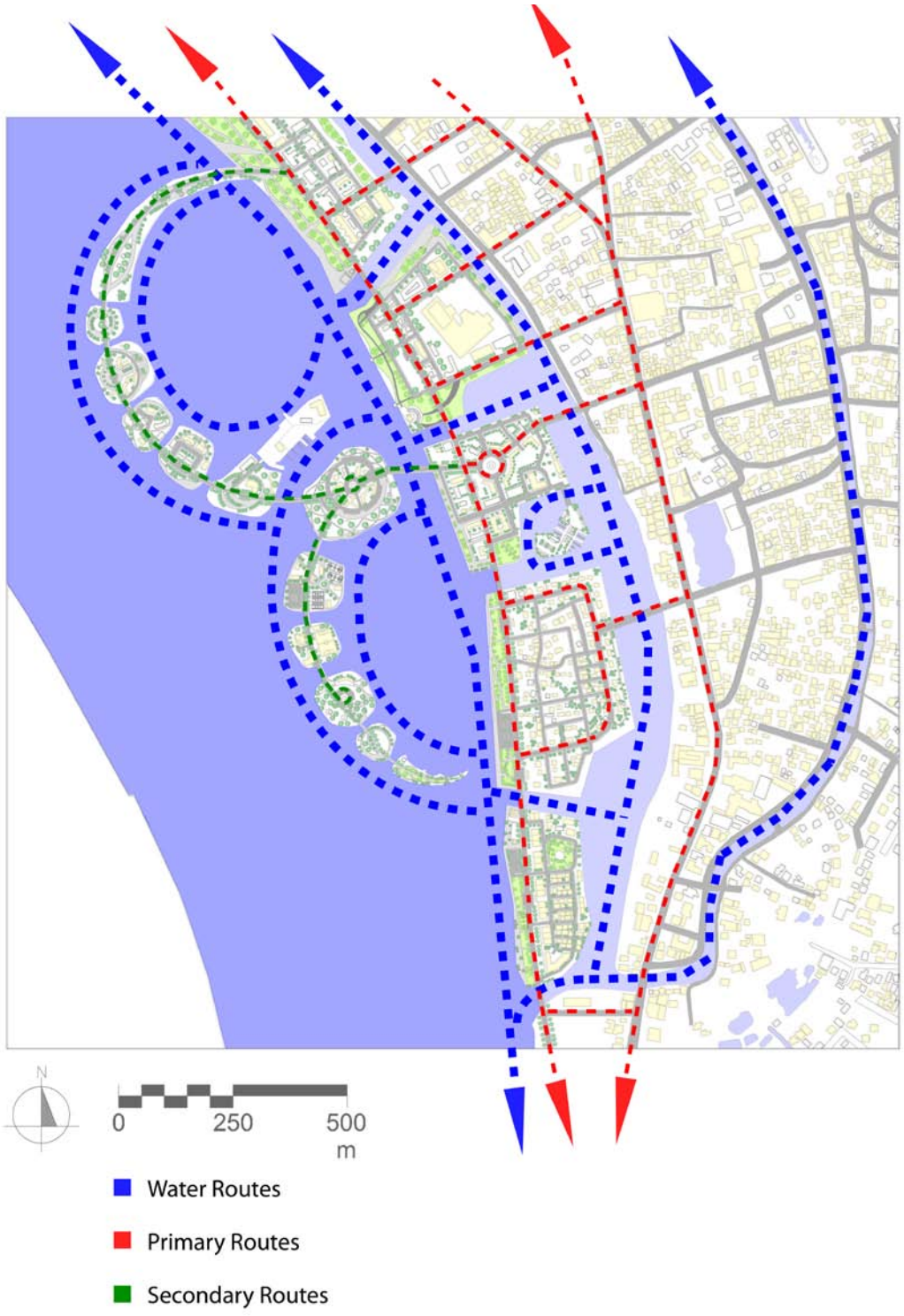


**Figure 7.28**: Design Scheme 3 – Perspective Sketches of Parks and Open Spaces
*Source*: "Siphathay Phanphengdy."

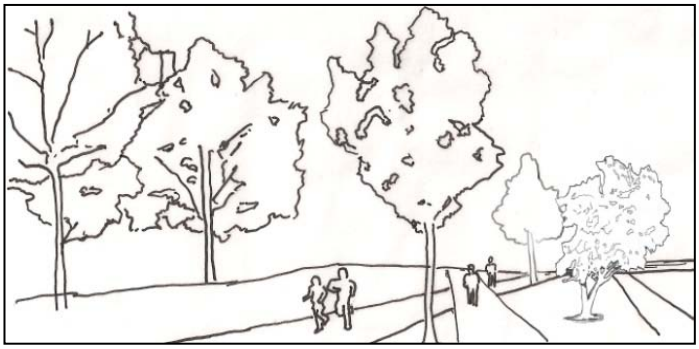


**Figure 7.29**: Design Scheme 3 – Physical Study Model
*Source*: "Siphathay Phanphengdy."

***Final Intervention***


**Figure 7.30**: Final Design – Master Plan (Dry Season)
*Source*: "Siphathay Phanphengdy."

In this final design scheme, the land formation and shape is inspired and developed from the three previous design schemes, which uses curvilinear formation to form inner and outer islands on the Mekong River that makes the village very integrated and distinctive. These organic formations are organized to form as walls and act as protection to prevent land erosion due to the strong river current. The outer organic islands provide protection for not only the adjacent vegetation and agricultural landscape, but also for the inner islands and the city as well. During the dry season from April to October, the green floodplain becomes a unique landscape with vegetable gardens, wet-rice paddy fields, crops, open grass areas and fishponds.


**Figure 7.31**: Final Design – Master Plan (Wet Season)
*Source*: "Siphathay Phanphengdy."

Because the fluctuation of the water levels (dealing with low and high water levels) is one of the important design criteria in this project, the master plan changes accordingly to the monsoon cycle season. Similar to the previous design schemes, when the floodplains/agricultural landscape disappear during the wet season due to the rising water, the outer islands appear as if they are floating on the river. At the same time, these floodplains then become Don Chan wetlands submerging to provide not only fish products to the village but also allow them to play and travel freely by boats.

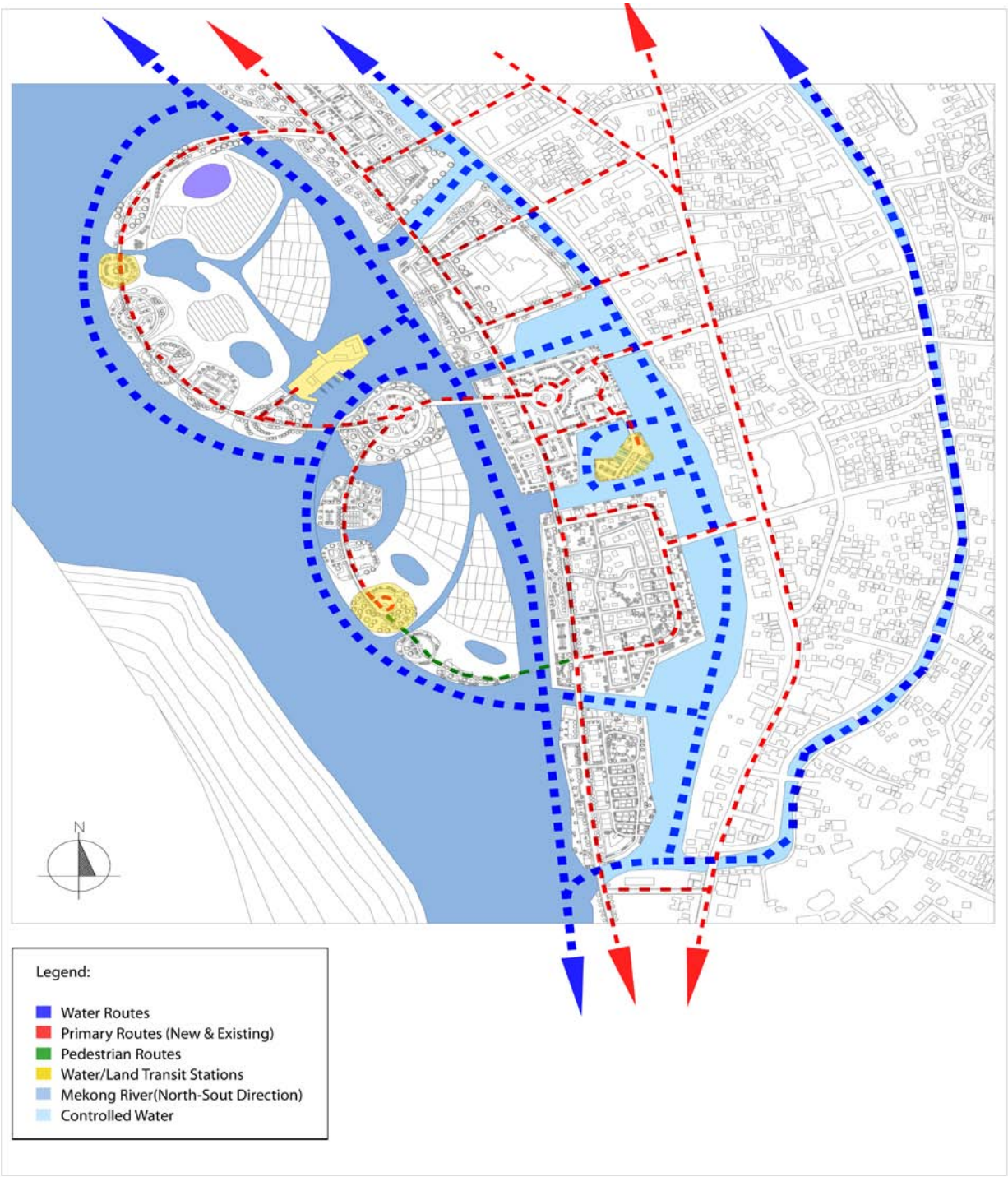



**Figure 7.32**: Circulation System (Dry Season)
*Source*: "Siphathay Phanphengdy."

The circulation network system is comprised of primary land routes (vehicular and pedestrian, new and existing) and new water routes. They will be developed to optimize conditions for greenery, water, leisure, and culture pursuits including fishing and farming.

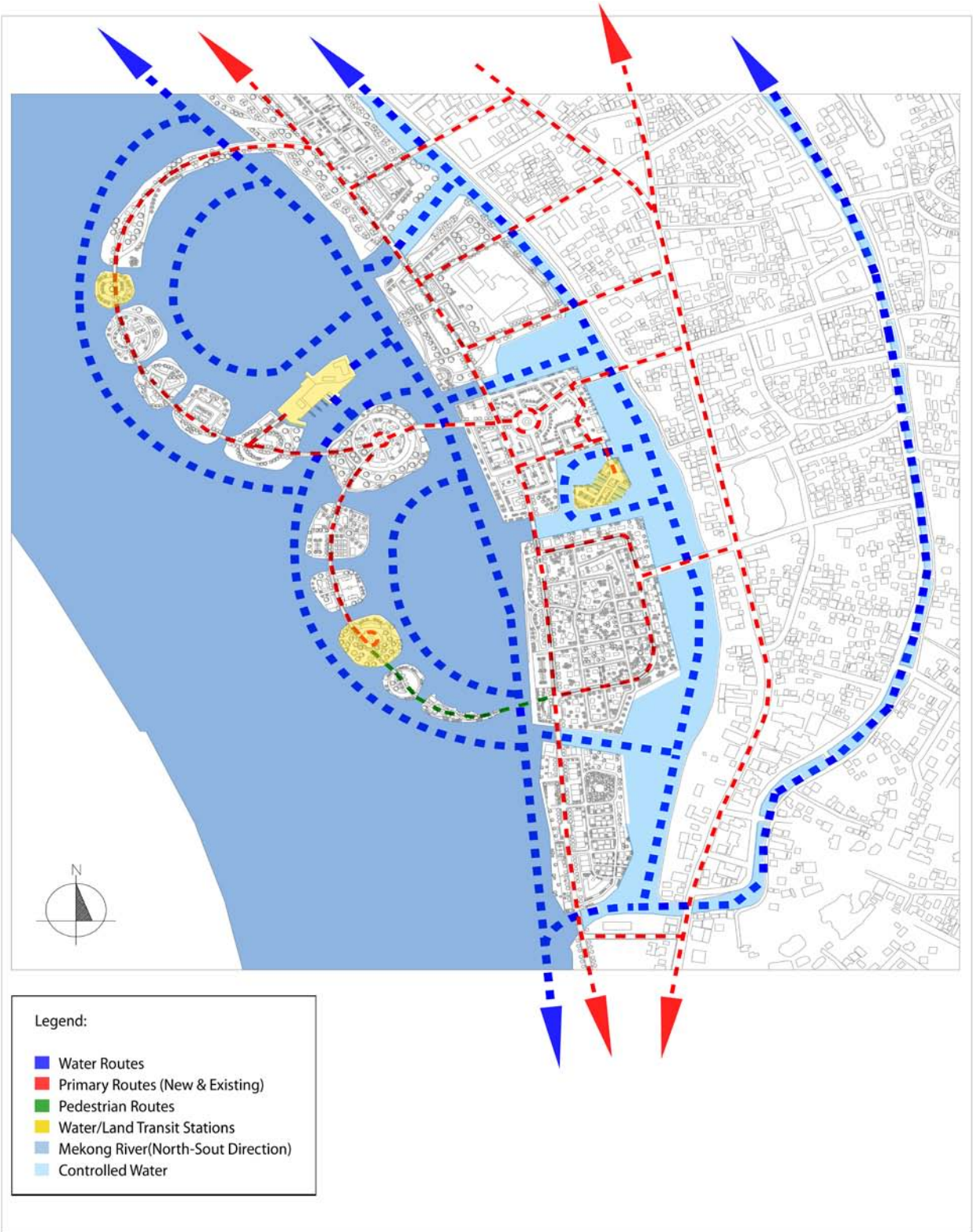



**Figure 7.33**: Circulation System (Wet Season)
*Source*: "Siphathay Phanphengdy."

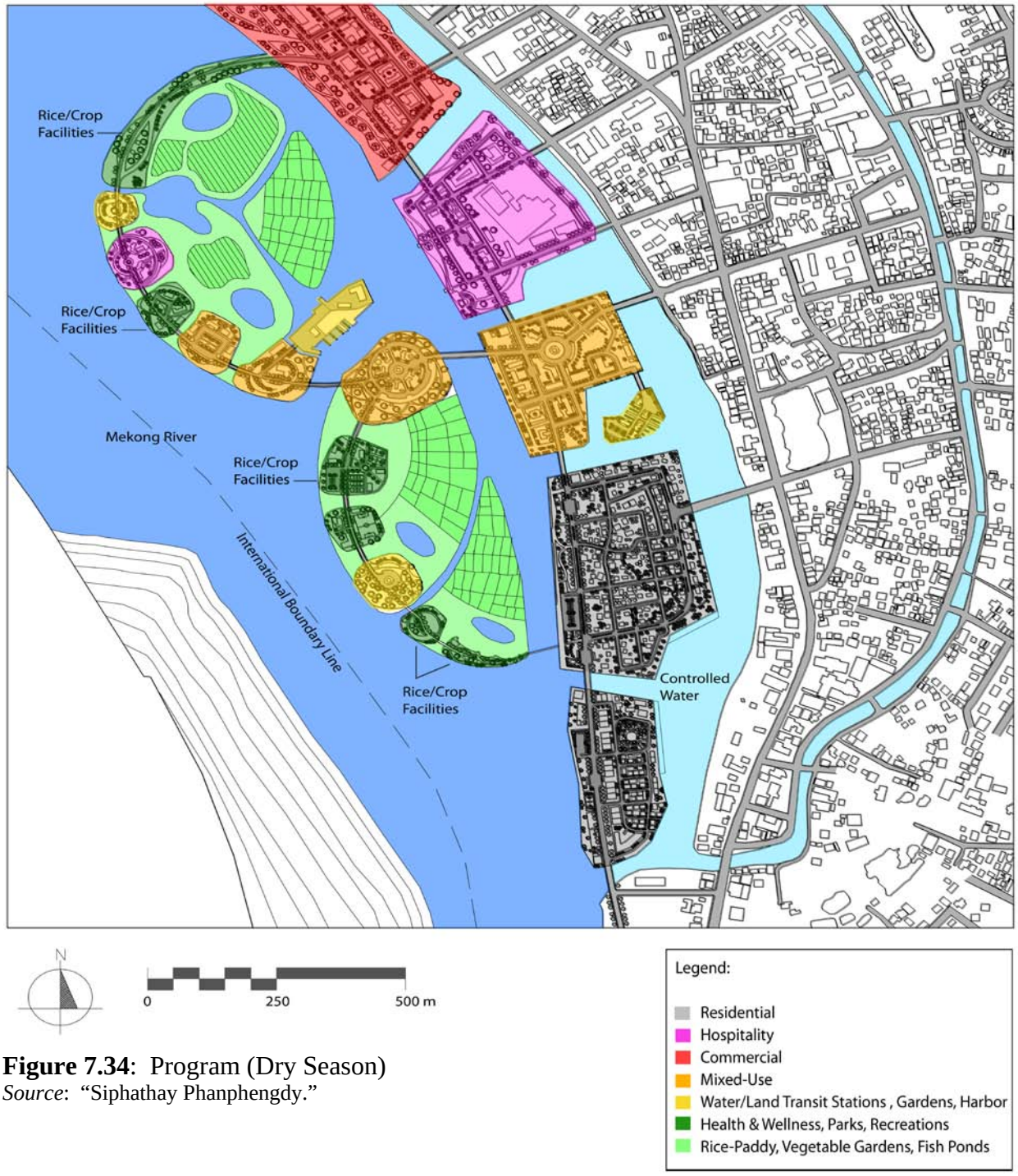



**Figure 7.34**: Program (Dry Season)
*Source*: "Siphathay Phanphengdy."

The new urban village of Don Chan is a self-contained village that obtains all the basic needs generated by the Mekong River, which include both traditional and new (modern) programmatic components. The traditional daily activities provided by the river such as agriculture, wet-rice paddy, vegetable gardens and fishing are integrated and mixed with other modern programs including commercial, recreation and hospitality in the final master plan.


**Figure 7.35**: Program (Wet Season)
*Source*: "Siphathay Phanphengdy."

Within the master plan, water-land transit stations are designed to allow users to move around the site by having an option of switching from land transportations to water transportations. These transit stations will also serves as a linkage to transport goods such as fishery products, vegetables, fruits, crops and rice that are grown locally in the floodplains and transit them to various facilities, commercial centers and open markets.

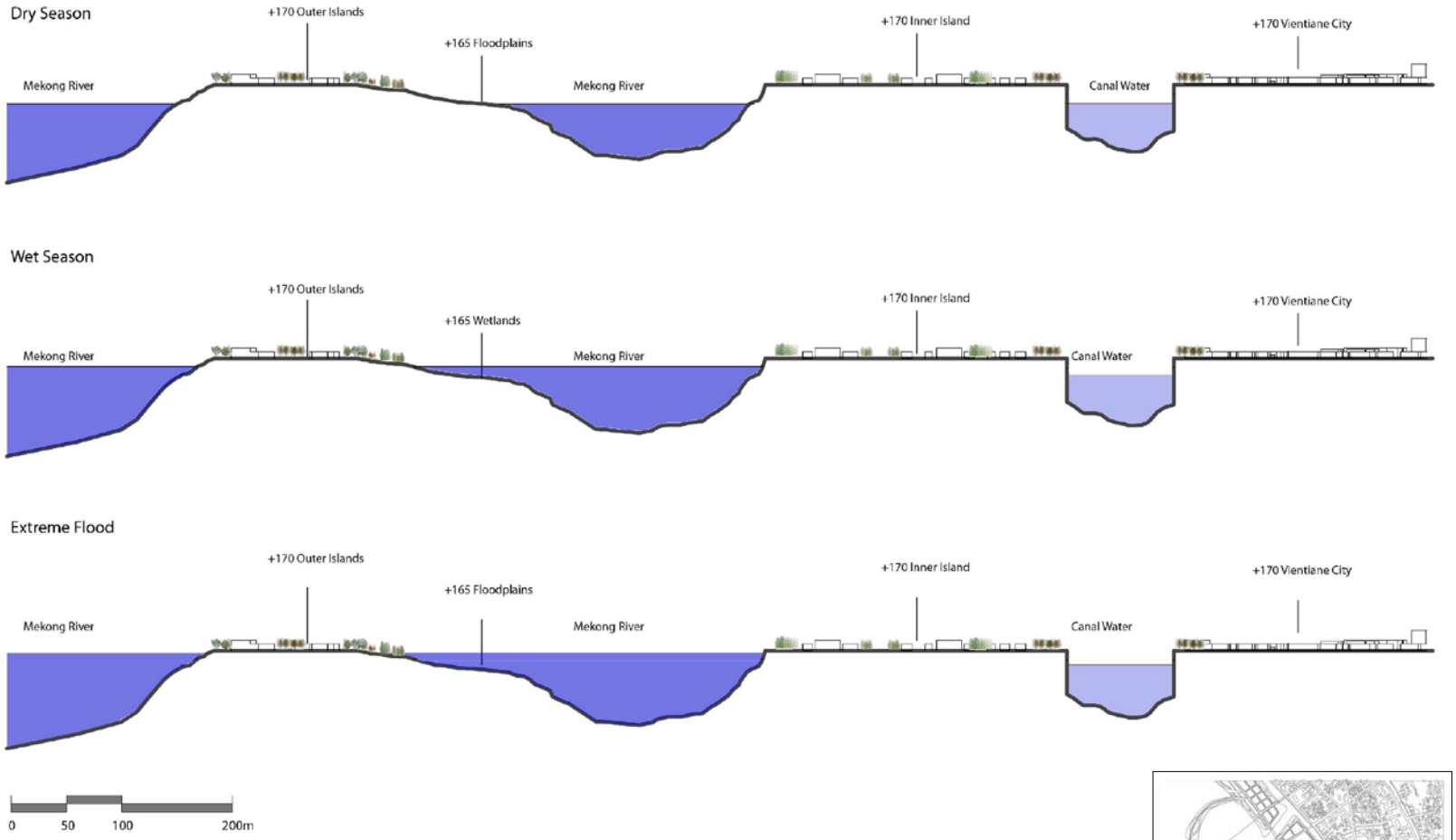



**Figure 7.36**: Section 1

*Source*: Done by "Siphathay Phanphengdy."

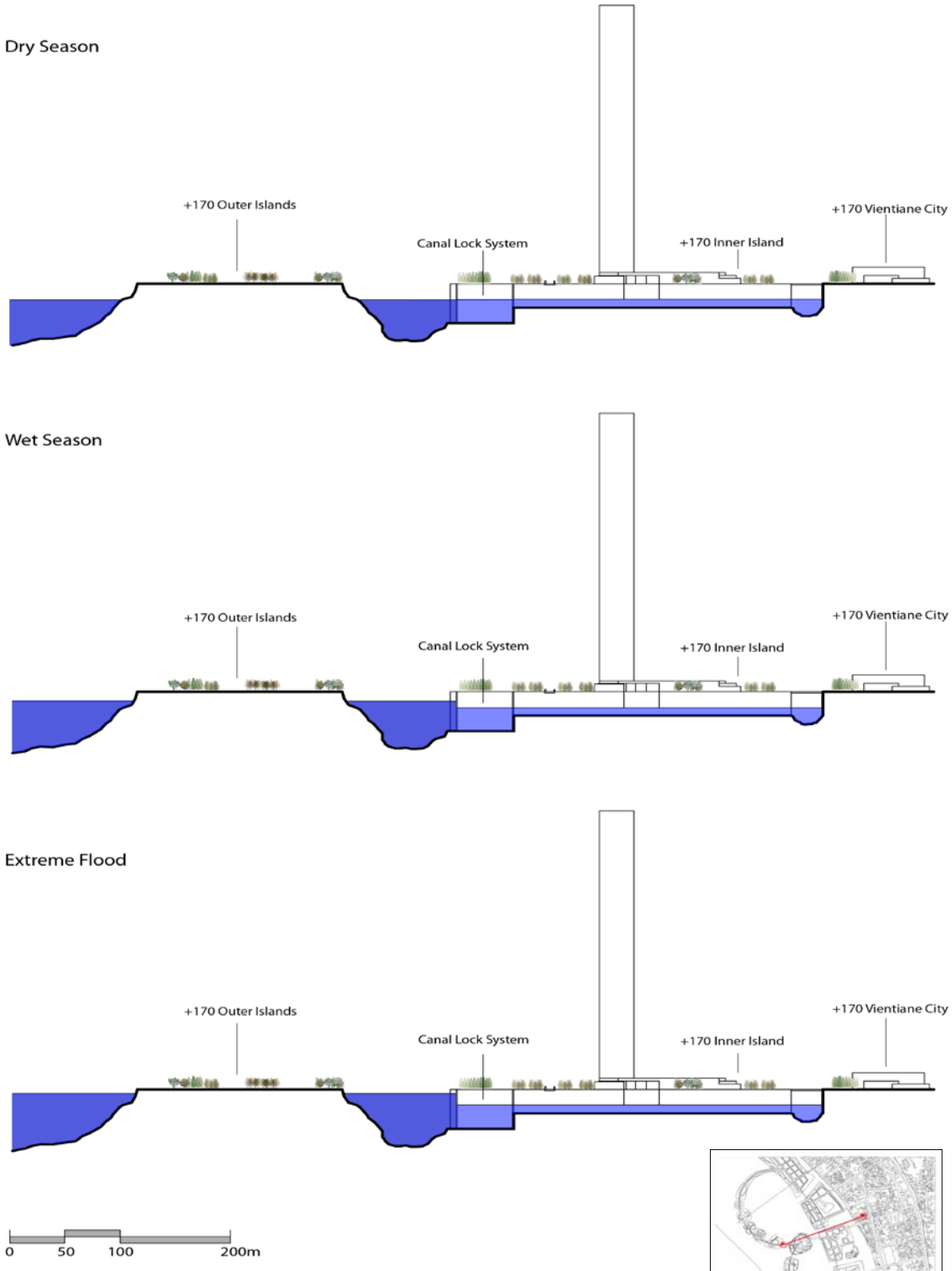



**Figure 7.37**: Section 2
*Source*: "Siphathay Phanphengdy."

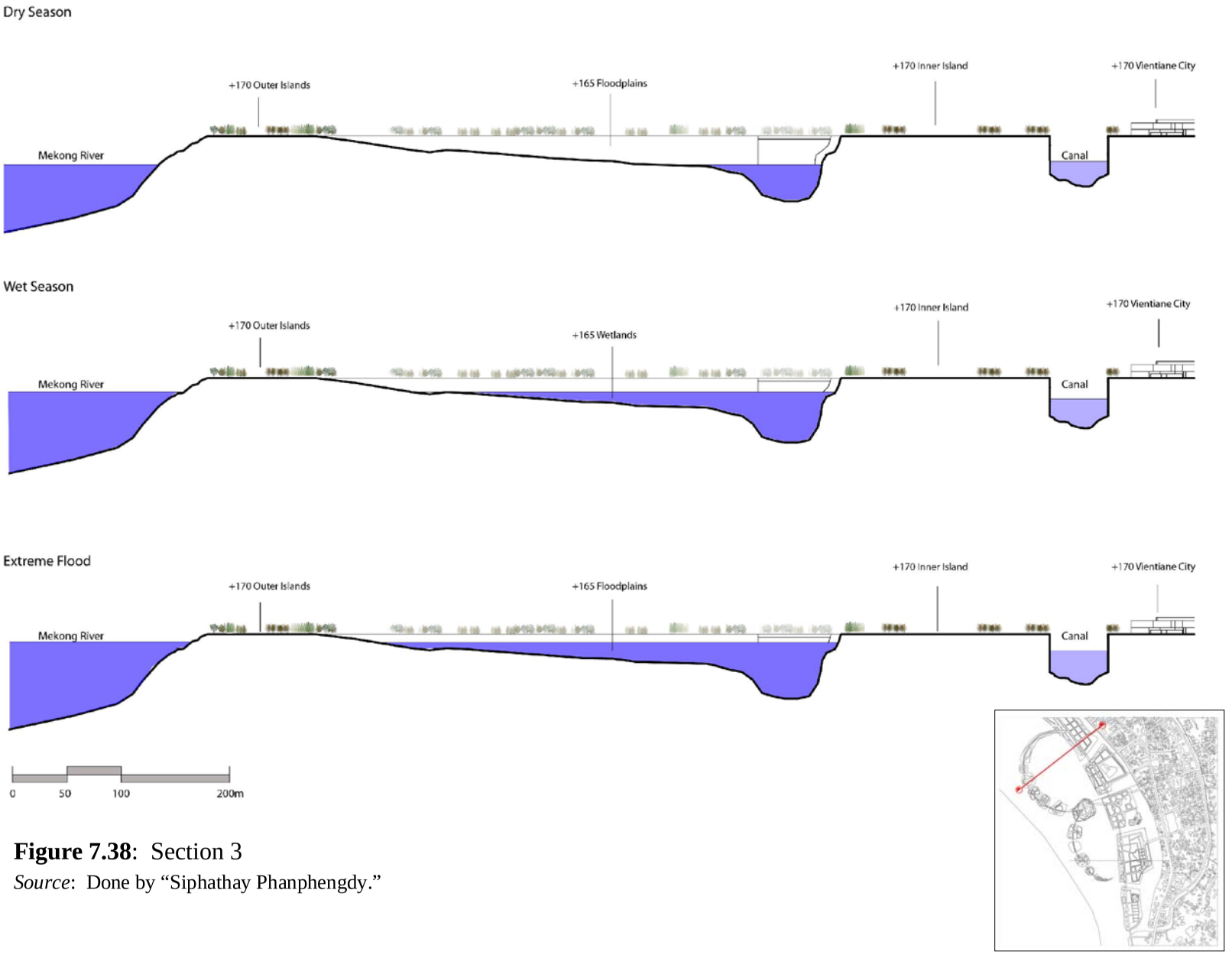



**Figure 7.38**: Section 3

*Source*: Done by "Siphathay Phanphengdy."

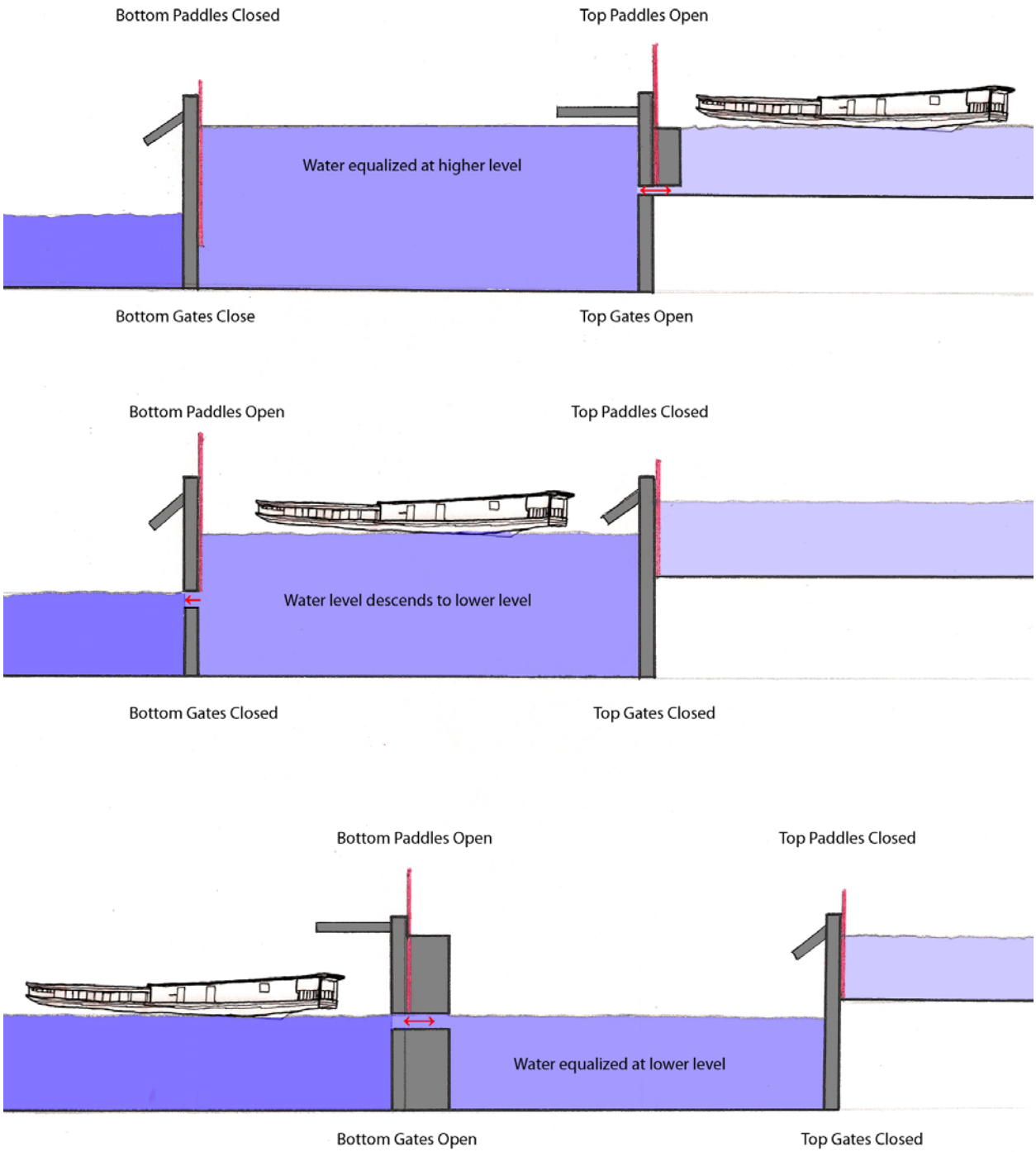



**Figure 7.39**: Canal Lock System
*Source*: "Siphathay Phanphengdy."

One of the important components that allow the master plan to fully utilize the river is the canal gates and lock system. The way a canal lock system transfer boats from the city to the Mekong River is by operating the top and bottom paddles to equalize the water level between the river and the canal. For instance, the above diagram shows the sequence of how to transport a boat from the city to the Mekong River.


**Figure 7.40**: Nodes – Dry Season
*Source*: "Siphathay Phanphengdy."

The web network structure consists of various activity nodes and physical connections. The nodes are solely a carrier for collective activities, which include a village board, facilities, commercial area, open market, civic/business island, mixed-use area, recreation island and agricultural/fishponds and other water-land oriented activities. These different nodes attract different users and they are located strategically near a public transport stop such as a transit station or harbor. The open market locates in the central area of the master plan to serve as an area for the villagers to sell and for other villagers or visitors to buy the local products.

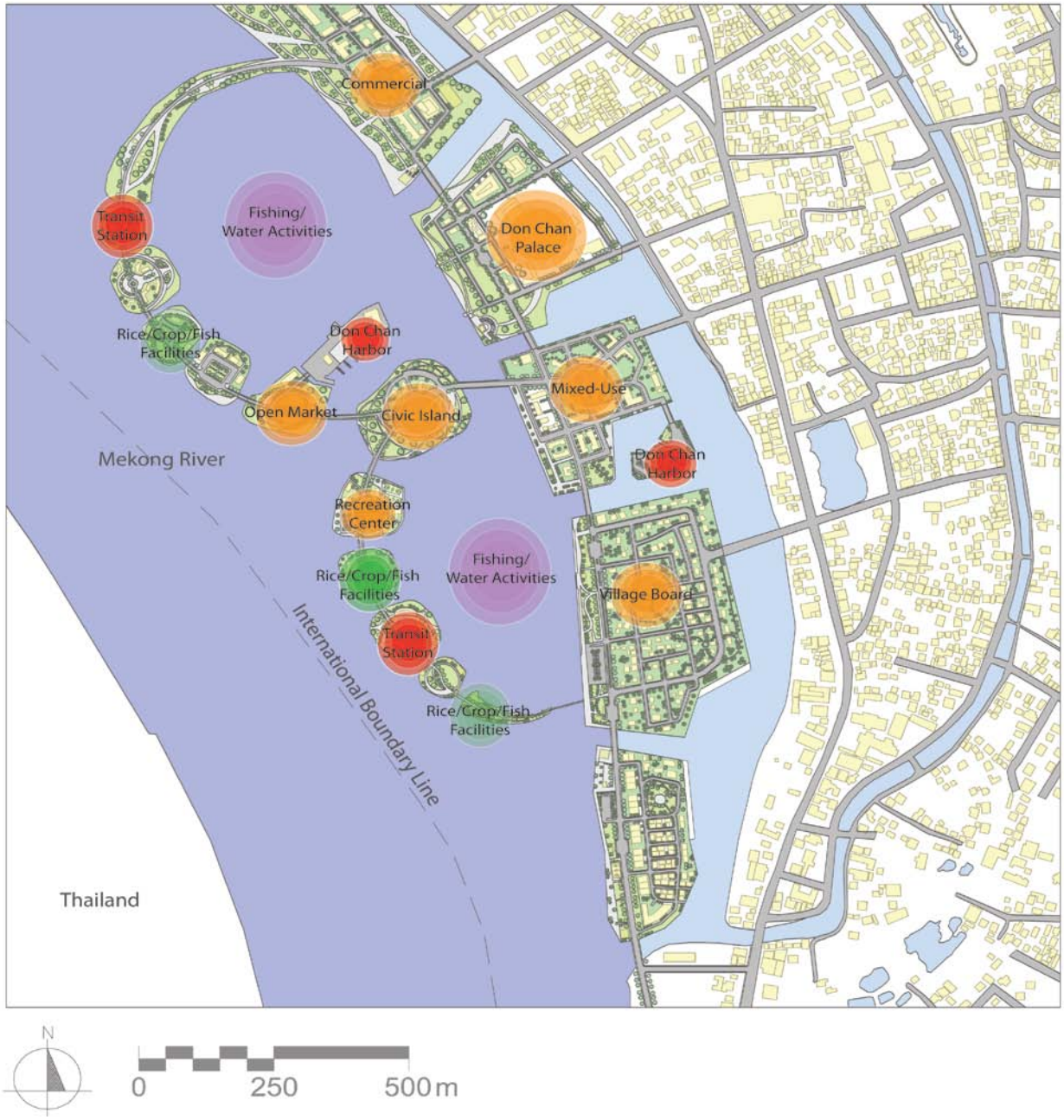



**Figure 7.41**: Nodes – Wet Season
*Source*: "Siphathay Phanphengdy."

During the raining season, the large nodes of agricultural landscape and floodplains transform into large fishing grounds and areas for water-oriented activities due to the rising river. This natural transformation phenomenon allows the villagers and visitors to shift from working and playing in the agricultural landscape with fishponds, wet-rice fields and open green spaces to more water-oriented activities such as fishing, swimming and water skiing during the rainy season.

**Figure 7.42**: Bird's Eye View 1 (Dry Season)
*Source*: "Siphathay Phanphengdy."

**Figure 7.43**: Bird's Eye View 1 (Wet Season)
*Source*: "Siphathay Phanphengdy."

**Figure 7.44**: Bird's Eye View 2 (Dry Season)
*Source*: "Siphathay Phanphengdy."

**Figure 7.45**: Bird's Eye View 2 (Wet Season)
*Source*: "Siphathay Phanphengdy."

**Figure 7.46**: Bird's Eye View 3 (Dry Season)
*Source*: "Siphathay Phanphengdy."

**Figure 7.47**: Bird's Eye View 3 (Wet Season)
*Source*: "Siphathay Phanphengdy."

**Figure 7.48**: Rendering 1 – View from the Mekong River near the Thai-Lao Border
*Source*: "Siphathay Phanphengdy."

**Figure 7.49**: Rendering 2 – View from Outer Islands during the Wet Season
*Source*: "Siphathay Phanphengdy."

**Figure 7.50**: Rendering 3 – Canal between Vientiane City and the new Don Chan Village
*Source*: "Siphathay Phanphengdy."

**Figure 7.51**: Rendering 4 – View of Don Chan Palace Hotel from Civic Island
*Source*: "Siphathay Phanphengdy."

**Figure 7.52**: Rendering 5 – View of Don Chan Palace Hotel from a Bus Stop
*Source*: "Siphathay Phanphengdy."

**Figure 7.53**: Rendering 6 – Wet Rice-Paddy Fields during the Dry Season
*Source*: "Siphathay Phanphengdy."

**Figure 7.54**: Rendering 7 – Wetlands of the Floodplains during the Wet Season
*Source*: "Siphathay Phanphengdy."

**Figure 7.55**: Rendering 8 – Water Activities on the Wetlands during the Wet Season
*Source*: "Siphathay Phanphengdy."

**Figure 7.56**: Rendering 9 – Villagers Fishing on the Wetlands during the Wet Season
*Source*: "Siphathay Phanphengdy."

**Figure 7.57**: Rendering 10 – Don Chan Boat Tour
*Source*: "Siphathay Phanphengdy."

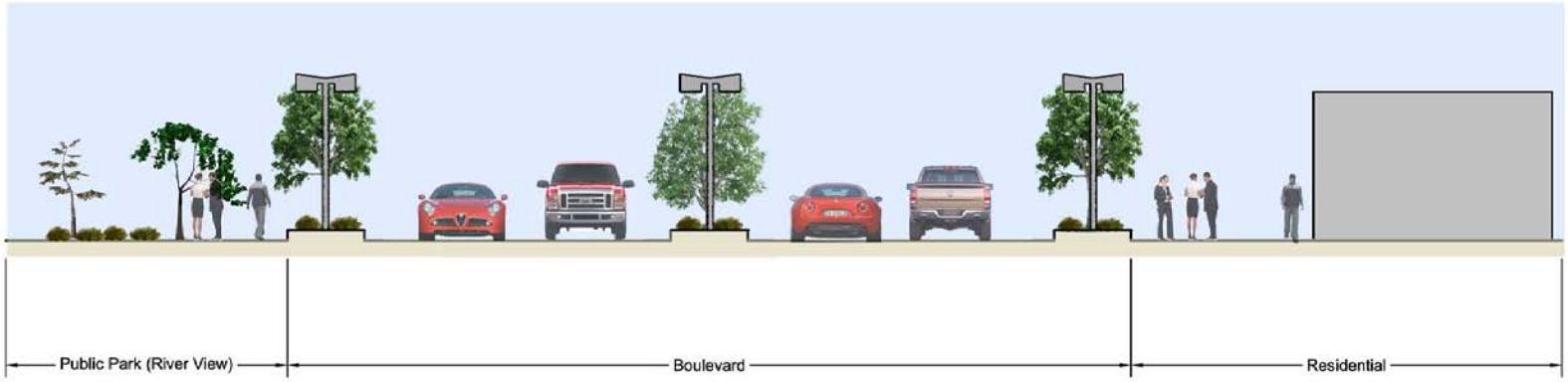
**Figure 7.58**: Close-up Residential Site Plans
*Source*: "Siphathay Phanphengdy."


The residential areas are made up of two distinctive islands: the upper and lower neighborhoods. The design ideas of these two residential areas were inspired by the studies of the Lao traditional *baan* organization and the different morphologies and grouping patterns. The intent was to combine the different ideas to create an organic arrangement and a more organized fashion. The idea behind the upper residential island was to keep the existing structures where they are (mostly single low-rise houses) and organized the streets around them while the lower residential area will be new structures (mostly low-rise housing and apartments).

Both islands are linked to one another with a major road that is parallel to the Mekong River and to the city. The major road then branches outward away from the river interconnecting one another into secondary routes leading to the living compounds.

The difference between the two residential islands is that the upper island is organized in a more organic sense with the influence of different traditional *baan* grouping patterns such as radial, linear, and branch style. The lower residential area on the other hand is less organic and more organized, parcelated or zoning-like pattern.

**Figure 7.59**: Road Sections (Residential Boulevard)
*Source*: "Siphathay Phanphengdy" with



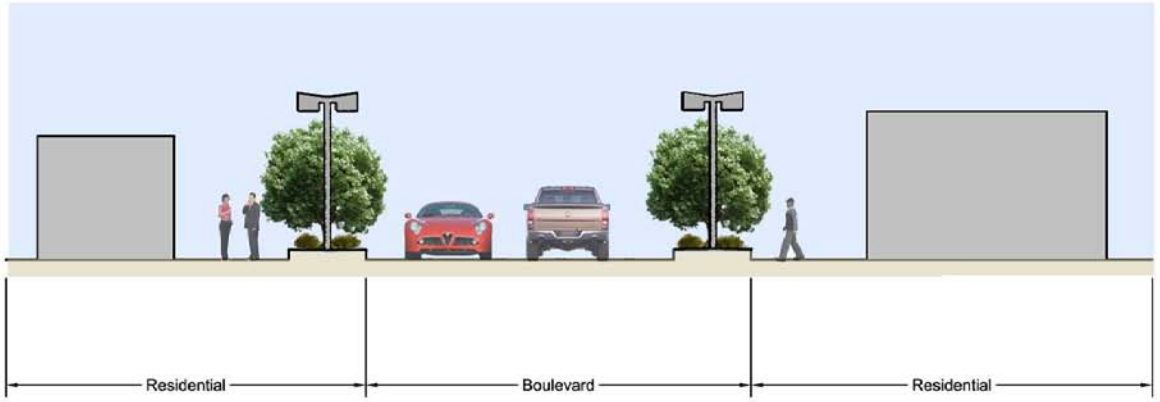
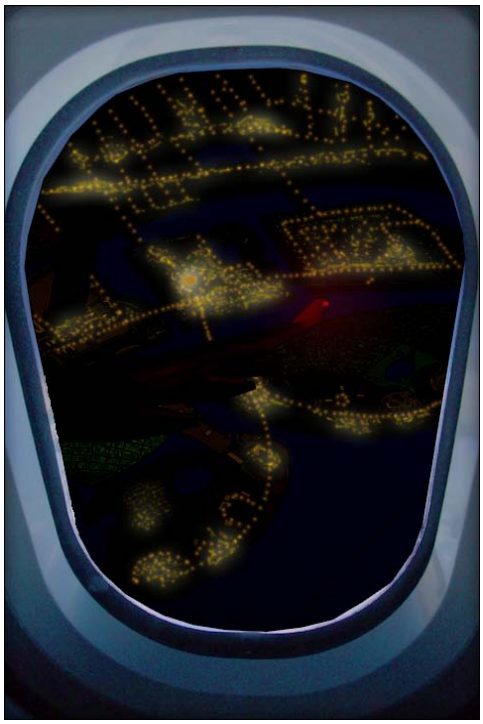



**Figure 7.60**: Visualization - Satellite View during the Dry Season
*Source*: "Siphathay Phanphengdy."

**Figure 7.61**: View from a shore in Thailand looking towards Don Chan Village
*Source*: "Siphathay Phanphengdy."

**Figure 7.62**: View from an Airplane during the day (*left*) and at night (*right*)
*Source*: "Siphathay Phanphengdy."



## Conclusion

The capital city of Vientiane is the largest city in Laos that is still growing and expanding. It is in a vital process of modernization, industrialization, expansion and adaptation to the new economical development resulting in an increased urbanization. Struggling with the unfamiliar world and an unusual pace, it requires a lot of energy and resources to grow. The problems of high population, density, traffic and flooding has now become parts of the Laotian lifestyle. The result of growing has led the Lao government to seek new land for further expansion. Don Chan, being one of the many development sites, is already planning for future urbanization. The fact that it's close to the Mekong River and its associated wetlands and floodplains, it is a significant site that must involve the principle of a thoughtful community and better design that responds to the vulnerable landscape and its surroundings in a way that is socially, economically, and environmentally responsive.

Water is the actual origin of Lao culture, like many other Southeast Asian civilizations. Its powerful influence on the people is reflected in all kinds of spiritual and physical forms varying from small *baan* (village) to a large city form. The relationship of *baan* and water-land geography (river, floodplains and wetlands) is a major ingredient of Lao culture. There is no doubt that the Lao culture is truly waterborne and many evidences show that water instincts still exist today. It makes sense to start reconsidering and utilizing this unique character since it has been done in the past. Furthermore, by this way we could conserve our own culture and manage the uses of energy and resources from the local point of view in a more efficient way.

This thesis is an attempt to suggest a way to help (with today's knowledge and technologies) propose a master plan for the Don Chan development project. The reuse of the existing floodplains into agricultural landscape, wetlands for fishing grounds, and waterways to the city is the major issues raised to mitigate the urban problem as well as to pave a better way for future development. This project proposes an intervention that includes:

1. The studies of a Lao concept of *baan* and water-land geography: typological analysis identifies certain characteristics of the *baan* system; hydrological and geological

analysis defines water-land geography; investigation of water-borne cities such as Ayudhya, Venice, and Lao cities of Luang Prabang and Vientiane

2. The establishment of utilizing the floodplains and wetlands in a more efficient way by reusing the floodplains for vegetation and agricultural purposes in the dry season from November to April, and reclaim the fishing grounds and water activities during the rainy season from May to October

3. The establishment of the public transportation network to include not just land transportation but also waterway networks as part of the system. This will create an alternative way for easy accessibility in and out of the site and the city, and help reduce the dependency on vehicles and offset carbon footprints

4. The establishment of a flood controlling system in preventing the city from flooding and maintaining the water level for water transportation routes

5. The establishment of a network village that revolves around the Mekong River

6. The establishment of open green spaces and reconsidering new programmatic components as part of today's modern *baan* system

The main attitude of this thesis is to promote local culture, connection, water awareness, Lao character, and sustainable development, which are about reuse, reduce, recycle, restore, renew and particularly, rethink. Through this methodology and intervention, I believe, is an effective way to reincorporate the river into modern Vientiane.

# Appendix A:  Contextual Analysis of Laos

The intention of Don Chan urban design application is to visualize and stimulate place-making improvements on the urban layout and its environment for the livelihood of the community. In order to understand the design strategy, one must first understand the country of Laos as a whole. This appendix provides an overview of Laos and touches on its geography, economics, politics, history, and architectural history and influences. It will also reveal how the country is becoming part of the development and urbanization trends in the Southeast Asia region.

***Geographical Positioning***

A landlocked country geographically surrounding by China, Vietnam, Cambodia, Thailand and Burma, Laos has no access to the sea but it is becoming a strategic point of trade and commerce and important regional base for successive foreign interests *(see figure 8.0)*. Trading routes between China and the mainland of Southeast Asia made Laos' strategic location a perfect stopping point. Relatively smaller than Vietnam, Laos has an area of 236,800 square kilometers or 91,500 square miles with almost 98% of land and only a few percentage of water. [95]


**Figure 8.0**: Map of Laos. *Source*: "Kasetsart University." http://www.eto.ku.ac.th/s-e/SEgroup2/Country_Report/Laos.pdf (*accessed October 6, 2009*)

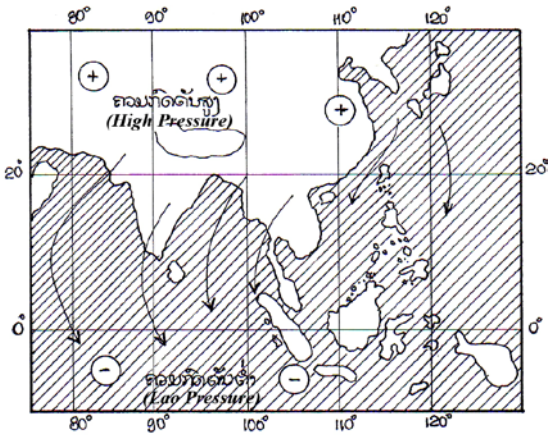
Laos consists of rugged mountains with thick forests, plains and plateaus. The mountain ranges help divide the border of Laos from Vietnam, China and

[95] Central Intelligence Agency. 2009. World Fact Book: Laos, https://www.cia.gov/library/publications/the-world-factbook/geos/la.html. (accessed October 1, 2009).

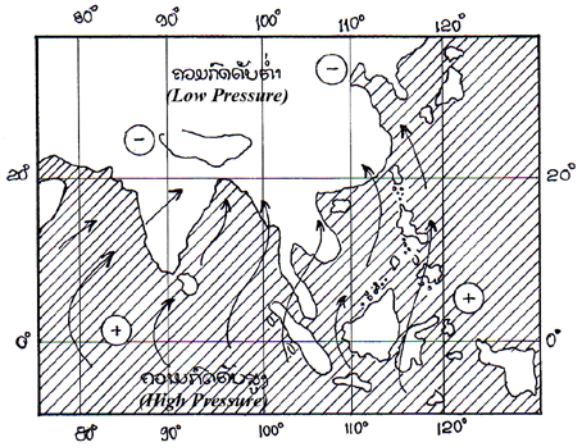
Burma. The largest river is the Mekong River, which flows down from China all the way down to the coast of Cambodia and Vietnam. This river forms a large part of the western boundary of Thailand and it is one of the most productive rivers in the world. Laos has 18 provinces in total that make up three regions including the north, central and south. The capital is Vientiane, strategically located in the central region near the border of Thailand. Along with Vientiane, other urban cities are Luang Prabang in the north, Savannakhet and Pakse in the south.

Laos is located in the tropical monsoon area that has a dry season from December to April, and rainy season from May to November. The average of precipitation in northern and southern Laos ranges from 1300-3000 mm per year while the central region gets about 500-2500 mm.[96] Furthermore, during the cool season from October to March, the downward trade wind flow brings cool temperature from China all the way down to Indonesia. In the summer, the trade winds come from the opposite direction bringing warm air upward towards Laos and China *(see figure 8.1)*.[97] The temperature ranges from place to place. The north of Laos tends to get colder during the winter. It ranges from 65-85 degrees Fahrenheit during the cool season while in the summer can go up to the high 90s.

**Figure 8.1**: Trade winds in Southeast Asia.
*Source*: "Sichanthala 1996-97, 2."




**Summer trade winds**




**Winter trade winds**

[96] Sichanthala 1996-1997, 26.

[97] Ibid., 24-25.

***Economic Growth***

Laos is heavily dependent on foreign aid, foreign investment and trade with its neighboring countries. According to the Central Intelligence Agency, it has GDP of $13.98 billion with $2,100 per capita with numerous rich natural and mineral resources such as timber, gypsum, tin, metallurgy, gold, gemstones, rice and electricity from its various hydropower plants.[98] Most of the Lao population works in the agricultural industry, particularly in rice production, which constitutes 80% of the labor force while 20% is in the industrial and services production.

However, as the influence of the global aspiration shifts from agricultural-based economy to industrial and commerce, Laos's economic growth will eventually expand and transform. For instance, evidence has shown in recent years that the tourism industry has grown rapidly making it an important component in the overall economy competing with the agricultural industry. Ever since the Lao government began to decentralized and encourage private enterprises, the tourism industry has grown from 14,000 visitors in 1990 to 1.1 million visitors in 2005.[99] Despite the high growth rate, Laos still has poor infrastructure, especially in the rural areas. Electricity and access to clean water is another issue that is distributed unevenly throughout the country. However, Laos hopes for a brighter future as it looks forward to removing its name from the United Nations' least developed countries list by the year of 2020.[100]

***Political Situation***

Laos is one of the few communist countries that are left in Asia today. Historically, its roots lie in the ancient monarchy Lao kingdom of *Lan Xang* until the French colonized it in the 19th CE. During the colonization, the French and the Siamese signed the Franco-Siamese Treaty in defining the current Lao and Thailand border in 1907.[101] After its independence from the French, the communist *Pathet* Lao took control and ended the six-century reign of the Lao monarchy. The Lao legal system is now based on traditional customs with French norms and

---

[98] Central Intelligence Agency, 2009.
[99] Ibid.
[100] Ibid.
[101] Ibid.

procedures. As a socialist republic country, Lao gradually returned to private enterprise and established the liberalization of foreign investment laws by the mid 1980s. As the country became more open to the rest of the world, Laos became a member of the Association of the Southeast Asian Nations or ASEAN in 1997.[102] In addition, Laos then became part of numerous international and non-governmental organizations including the World Trade Organization, the United Nations Educational, Scientific and Cultural Organization or the UNESCO, and Asian Development Bank.

***Demographic, Social Growth and Development***

The economic growth from trade, investments and commerce facilitated by strategic geographic positioning has contributed to the development of Laos' social mixture of eastern and western cultures, particularly in urban cities. As the country becomes more and more open to foreign investors today, it has created an increase in foreign migration and local remigration. For instance, historically people emigrated from other countries such as China, France, Thailand and Vietnam to seek prosperity, peace, nature and social betterment. The Lao national population has doubled since 1985. Today, Laos has a national population of 6.8 million, which 31% live in urban cities while the remaining occupies rural and upland areas.[103] Despite foreign expatriates, the Laotians are characterized into three groups:

1. *Lao Loum* are lowland people that make up the majority of the population. They occupy the river valleys and plains, cultivate paddy rice, and work in urban contexts. Lowlands are subject to the main economic market and thus affected by modernization. Historically, *Lao Loum* migrated southward and drove the indigenous population upward into the hills. They are comprised of several ethnic groups of the Tai-Kadai speaking people. [104]

2. *Lao Theung* are midland people that account for approximately 24% of the population. They occupy the hills and practice wide range rotational shifting cultivation systems.

[102] Ibid.
[103] The population statistic based of 2009 by Central Intelligence Agency, 2009 (accessed April 1, 2010).
[104] Aubertin 2001, 11.

Originally, they were the Mon-Khmer who were displaced by the *Lao Loum* and now live in the midlands. [105]

3. *Lao Sung* are the highlands or upland people that make up about 10% of the population who live at the highest altitudes. The traditionally practice varying forms of shifting cultivation such as slash-and-burn on the upper slopes in the mountains. Their ethnic groups are the Hmong, Mien, Akha, Lahu and other groups related to Miao-Yao or Tibeto-Burmese speaking people. [106]

The official language of Laos is Lao or Laotian, which is mostly spoken in the lowland and midland areas. However, some of the midland and all of highland people have their own language where the lowland people do not understand. They speak languages of the Austro-Asiatic family such as Kammu, Lamet, and Sam Tao, and Hmong. More than half of the population adopted Buddhism as their main religion with their own local beliefs of animism. There are also other religions such as Christianity, Islam, and ancestral worshipping.

***History***

Laos is one of the countries in the world that has had a long history through conflicts and wars with its neighboring countries. The Lao people had fought and protected the kingdom until they ended up with what we call Laos today. Patriotically, Laotians have no regrets and continue to live a traditional way of life and culture. The people of Laos are believed to be part of the *Tai*-speaking people who migrated to Southeast Asia in the areas of Thailand and Laos from Southern China.[107] The Mekong River is the only river that flows down from China to the end of Cambodia separating Thailand and Laos today. Because of this geographical position, Laos has been under the control by its neighbors at various times in their history. Different groups including the Burmese, Siamese and Vietnamese have ruled most of the areas in Laos.[108] These areas could be part of Burmese history, Thai history and Vietnamese history. It was difficult to determine what towns or areas belong to the Lao kingdom.

---

[105] Ibid., 11.
[106] Ibid., 11.
[107] *Tai* is a general linguistic category that referred to a broadly share culture in one time by Evants 2002, 2-9.
[108] Differentiations between Lao and Siamese was a result of differential spatial and integration of societies into the modern world system. Siamese are known as the people of Thailand today. Ibid., 36-38.

The most significant period of Lao history was not until the beginning of the 14th century when the lands of Laos were united under one kingdom known as the kingdom of *Lan Xang*, one of the greatest Tai nations, by a legendary king. When the Lao people migrated down from China, they made new settlements in many areas of the Southeast Asian mainland. One important settlement was in *Muang Sua* that later became Luang Prabang city. During the reign of *Fa Ngum*, the first Lao king in the 14th CE, various parts of what is known today as Laos and the whole northeastern part of Thailand were united as the Kingdom of *Lan Xang (figure 8.2).*

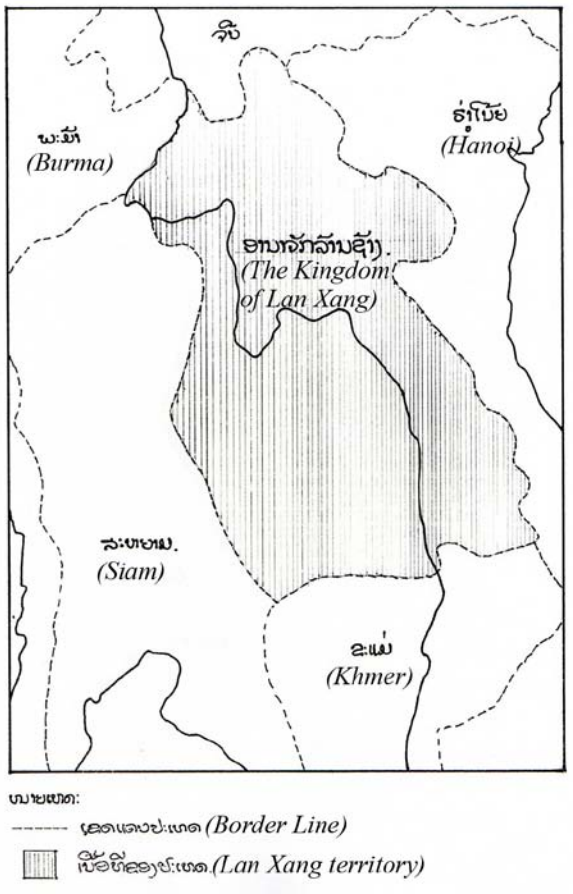



**Figure 8.2**: Territory of the *Lan Xang* Kingdom in 1375 under the ruler of King *Fa Ngum*. *Source*: "Sichanthala 1996-97, 11."

One of the factors that helped develop and gave rise to the political structures and kingdoms in Southeast Asia was the concept of man of prowess. Man of prowess was an individual who gained the right to rule because he had the greatest merits from his previous life or a descendant of the great one. Most Southeast Asian societies are ruled by individuals who have extraordinary luck or power, and they are believed to have superior lineages from great ancestors.[109] The ideology of merit and lineage of royal ancestry were very important. For instance, the great King *Fa Ngum* who founed the first Lao kingdom of *Lan Xang* is considered a man of prowess. He is believed to be a descendant of *Khun Boulom.*[110] Because he was the man of prowess, he was able to unite Lao areas and establish a powerful Tai kingdom that lasted about three centuries. *Fa Ngum* was not only known for uniting Lao polities but also brought Theravada Buddhism into *Lan Xang* and it

[109] Andaya 1992, 59.

[110] According to the legend of Khun Boulom, Boulom was the mythical first ancestor of all the Tai. Stuart-Fox 1997, 1.

became the main religion in Laos. As a result, the key figure of King *Fa Ngum* plays a big role in the birth of Laos.

After his reign and many of his successors, the feudal lords or sons of the king and mandarins of *Lan Xang* became competitors for the throne. That has led to the division of the country into three kingdoms including the Kingdom of *Lan Xang* of Luang Prabang in the north, Kingdom of *Lan Xang* of Vientiane in central, and Kingdom of *Lan Xang* of Champasack in the south *(see figure 8.3)*. It was not clear how the country came to be divided, but one of the theories was that when the competition for the throne between each individual was so chaotic that one of the lords sent a message to the Siamese king to help solve the problem. The king of Siamese then later came to Vientiane with his large army and proposed that *Lan Xang* be divided into two kingdoms of Vientiane and Luang Prabang.[111]

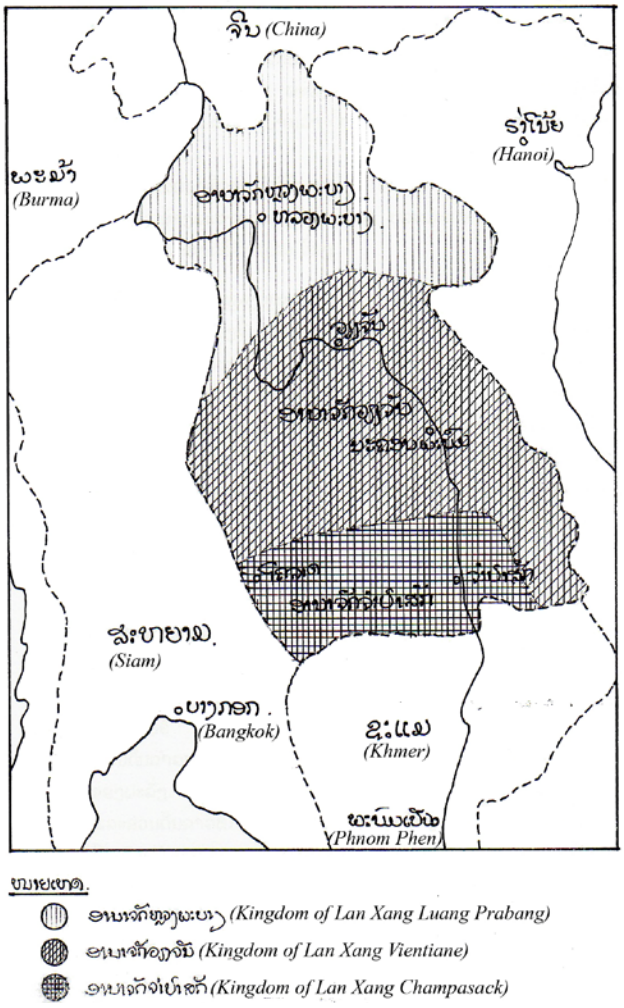



**Figure 8.3**: Division of the three kingdoms of *Lan Xang*. *Source*: "Sichanthala 1996-97, 12."

Furthermore, each kingdom and *muang* was ruled by different kings. [112] It was also agreed that all the northern *muangs* would owe allegiance and pay tribute to Luang Prabang and

[111] Simms 1999, 109.

[112] *Muang* is a district or a political space within a central city, administrative area that was directly responsible to the king; This political structure was characteristic of the Tais suggested by Evans 2002, xv-5.

not to Vientiane.[113] The kingdom of Vientiane was having trouble with not only the north, but also the south. By this time, Vientiane was already becoming weak and many of its allegiance *muangs* did not pay tribute to Vientiane anymore. The kingdom of *Luang Prabang* enjoyed its tribute by northern *muangs*. The independent kingdom of Champasack soon got involved into the affairs of Vientiane and Siam. As a result, all of the three kingdoms were reduced to tributaries of Siam by the end of the 18th century.

Thailand, Burma, Cambodia, Vietnam, and all smaller polities came under one ruler, but Laos was different. The kings often had many sons, the power shifted frequently between individuals. Nevertheless, when the kingdoms were divided, the kingdoms became separate *muangs* but operate in the same *mandala* by independent monarchs.[114] The history of Vientiane and Luang Prabang was often organized together because the kingdom of Vientiane derived from the first capital of *Luang Prabang* and it was right above Vientiane geographically. The king could travel back and forth while ruling the kingdom. The shifting of the first capital to Vientiane was not far in distance. Luang Prabang was not completely faded out when Vientiane became the new capital because the *Prabang*, the holy statue of Buddha, was still in Luang Prabang.[115] Champasack was located in the south of Laos, its position in the area and its distance played a big role in the *Lan Xang* history.

In *Lan Xang* history, Champasack was never fully involved; it is often about Vientiane and Luang Prabang. It is because Champasack was an independent kingdom for more than two centuries. Unlike Luang Prabang and Vientiane monarchs, Champasack is claimed to have descendants from the royal line of the most ancient of the cities that became Vientiane.[116] For instance, many ancient royal families came from Vientiane to start a new kingdom in Champasack. It was unclear when the history of Champasack started. It was also difficult to know what Champasack areas were like during early centuries, but it was known that in the beginning of the 18th century, there was a dynasty in Champasack. The kingdom was established

---

[113] Simms 1999, 111.
[114] *Mandala* is associated with Hindu and Buddhist model of the cosmos that represented a human body and a state or a geopolitical idea that the sacred center is ruled by a king and he has the direct power, by Evans 2002, 6-7.
[115] Ibid., 24-25.
[116] Simms 1999, 183.

by King *Sayakoummane*. He was known to be the longest reigning monarch and the one who best succeeded to unite Champasack into a kingdom.[117] The kingdom then got involved and was influenced by the kingdom of Siam later on. It helped Siamese attack the kingdom of Vientiane. After that, Champasack was under the Siamese and it became a vassal of Bangkok as well as other Lao kingdoms in the 19th century until all Lao kingdoms were under the French Empire.

The three kingdoms often have their own history and annals. Each kingdom views Lao history in a different perspective, but nevertheless they all are a part of the history of Laos. The three kingdoms of Luang Prabang, Vientiane and Champasack could never become the power of a single centre of *Lan Xang* because the act of separation created a new set of peripheral *muang*. The expansion of the Vietnamese empire and the *mandala* of Siam influenced the Lao kingdoms in a way that the imbalanced power translated into a geographical shift in *muang* allegiances. For instance, "the *Isan muang* [Northeastern of Thailand] was paying tribute to Bangkok and became under the Siamese *mandala*, so they were no longer available as constituent elements cohering around a Lao centre of power".[118] It is still difficult to argue when Lao history began. However, it is important to know that there were three major regional *muangs* within the Lao history of *Lan Xang*. The legendary king, *Fa Ngum*, first united all of these kingdoms. Then the kingdoms were under the hands of his descendants and later they split into regions due to internal difficulties and neighboring conflicts. When learning about Lao history, one must understand that different regions and *muangs* have their own history. They all play a role in the rich history and culture of Laos.

After the fall of *Lan Xang*, the three kingdoms fell under Siamese control by the 18th century. Siamese invasions have led much destruction in Laos. For instance, almost the entire city of Vientiane was burnt down while only a few temples have survived. Buddhist relics and most of the population from Vientiane were taken to Siam. By the 19th century, the French came and colonized Laos. During their occupation, they signed a treaty with Siam drawing a map between today's Laos and Thailand territory.[119] Laos became independent from the French in

---

[117] Ibid., 165
[118] Stuart-Fox 2002, 5.
[119] Evans 2002, 40-41.

1945 and then was dragged into the Vietnam War. At the same time, Laos continuously struggled through the Laotian civil war between the communist party and the royal Lao government. Eventually, the communist Lao party, with the support from North Vietnam communist party and the Soviet Union, put an end to the Lao royal monarchy. Today, Laos remains one of the few communist countries in the world.

### *Historical Context of Lao Architecture*

There are still lessons for the architects and planners creating new environments from the traditionally built environment. However, the process of its survival is uncertain. The physical architectural existence in many places has not been integrated fully into the international language. The challenge of culture and architecture remains. The history, culture and traditions can be accepted or rejected, but they can also be engaged by understanding its concepts and building upon it. All of these aspects of heritage can also be found within the character of the site or place where architects and planners can become influence by.

Unfortunately, the built heritage of Laos has long disappeared due to damage and destruction of the tropical climate and wars, particularly from neighboring countries. However, few structures have survived and persevered until the present day. Most of the remains are from recent times with reconstruction in accordance to traditional styles, modern techniques and materials. The remains include ancient structures from pre-historical times, Khmer and Buddhist temple complexes, traditional domestic dwellings, and the after math of the French colonization. It is difficult to define what Lao architecture is since there were outside influences throughout their history. However, it is essential to lay out all of these aspects and acknowledge them as part of the Laotian architecture.

#### *Pre-history and Early Architecture*

The earliest trace of Lao heritage and architecture date back as early as 1000-500 BCE when mysterious free standing stones were found erected over a large cluster of burial chambers

in the northern part of Laos in Hingtang Huamoung in Luang Nam Tha province. [120] These standing stones measure up to 2 meters in diameter pointing towards the sky *(figure 8.4).* It is believed that they were formations of petty kingdoms during this pre-historic period. The people who created these burial chambers and stones were the ancestors of the people who built the Plain of Jars in Xieng Khouang province from the 4th-2nd BCE *(figure 8.5).*[121] These thousands of stone jars are spread out in clusters all over the province strategically situated in high elevations. The jars are made from sandstones and weigh up to 13 tons and are 1-3 meters in height. [122] In addition, these stone jars and earthenware jars are believed to hold human bones and offerings as if they were burial urns. The Plain of Jars is one of the most important pre-historical archaeological sites in mainland Southeast Asia.

**Figure 8.4**: Standing stones in Hintang Huamoung
*Source*:
http://www.travelsinasia.com/Laosz/Laos_files/hintang.jpg

**Figure 8.5**: Plain of Jars
*Source*:
http://www.explorelao.com/images/plain%20of%20jars.jpg

By the 3rd century, the Mon had established settlements in today's Bangkok and gradually expanded all the way to Burma. The influence from the Mon was their contribution of spreading Theravada Buddhism and Buddhist temples throughout Southeast Asia. Simultaneously, the Khmer civilization occupied southern Laos. By the 9th to 13th century, the great expansion of the Khmer kingdom spread all the way to central Laos. [123] Besides Angkor Wat, one of the greatest displays of Khmer architecture outside of Cambodia is *Wat Phou,* which is also the largest archaeological site in Laos. It sits near the Mekong River in southern Laos *(figure 8.6).* Later it was inscribed on UNESCO's World Heritage List and Associated Ancient Settlements in

---

[120] Doling 2006. http://www.culturalprofiles.net/laos/Directories/Laos_Cultural_Profile/-951.html (accessed October 5, 2009).
[121] Ibid., http://www.culturalprofiles.net/laos/Units/172.html
[122] Ibid., http://www.culturalprofiles.net/laos/Units/172.html
[123] Ibid., http://www.culturalprofiles.net/laos/Directories/Laos_Cultural_Profile/-951.html

2001.[124] The complex is built on six different levels of terraces connected by steps and a central walkway covering about 1,400 meters in a line running from east to west of the mountain.[125] It consists of carved walkways, courtyards, water ponds and galleries that are decorated with Hindu gods and imagery. The complex is laid out geometrically with temples, shrines and water in an axis pattern from the mountain to the river. While the structures were built as Hindu temples originally, it became a Theravada Buddhist complex for the Laotian communities and a sense of Lao heritage and identity.

**Figure 8.6**: *Wat Phou* in Champasack
*Source*: http://www.flickr.com/photos/mytripsmypics/3512356593/

*Wat (Buddhist Temple) Architecture (1353-1893)*

When the Tai-speaking people journeyed southward from China in the 11th to 13th century, they adapted Theravada Buddhism with their own local animalist beliefs. They replaced the old local ideology that was influence by the Khmer with Tai *mandala* system. As they established the first kingdom, they started to focus on their religion. By the 16th century, Buddhist art and architecture became common and a focal point in everyday life in the kingdom of *Lan Xang*. The temples or *wat* had the same basic features as the temples of the Siamese and Khmer, but they were more modest in appearance. For instance, the distinctive characteristics of a Lao *sim* or congregational hall in a temple complex is *dok so fa*, which is the golden decorative roof metal fixture that is located on the roof tiles in the middle of the whole structure *(figure 8.7, 8.8).*[126] The row of these gold fixtures is pointed towards the sky representing the connection to

[124] Ibid.
[125] Ibid., http://www.culturalprofiles.net/laos/Units/749.html
[126] Ibid., http://www.culturalprofiles.net/laos/Directories/Laos_Cultural_Profile/-1044.html

the heavens. Moreover, the golden-tiered umbrellas symbolize royalty and the imagery of kings in the Hindu and Buddhist beliefs.[127] There are other distinctive architectural motifs in a Lao temple, but *dok so fa* is one of the most obvious and yet important elements in Lao culture.

**Figure 8.7**: *Dok so fa* is found on the roof of Wat *Xieng Thong* in Luang Prabang.
*Source*: http://www.tinsan.net/images/laos/Wat%20Xieng%20Thong%20%202%20(Luang%20Prabang).JPG

**Figure 8.8**: *Dok so fa*, the golden roof fixture on Lao temples.
*Source*: Heywood 2006, 45.

From the beginning of the first century of *Lan Xang* to the 16th century, there were three styles of Lao Buddhist temples.[128] They include:

- Luang Prabang I was developed from the early centuries of *Lan Xang* when they first construct Buddhist temples to house the sacred Buddha.
- Luang Prabang II was established in the 16th century with the inspiration of *Lanna* influence. *Lanna* was a nearby kingdom in today's northwestern area of Thailand.
- Luang Prabang III style is the *Xieng Khouang* style, which was another muang located to the south of Luang Prabang. The king got inspired when they moved the capital from Luang Prabang to Vientiane.

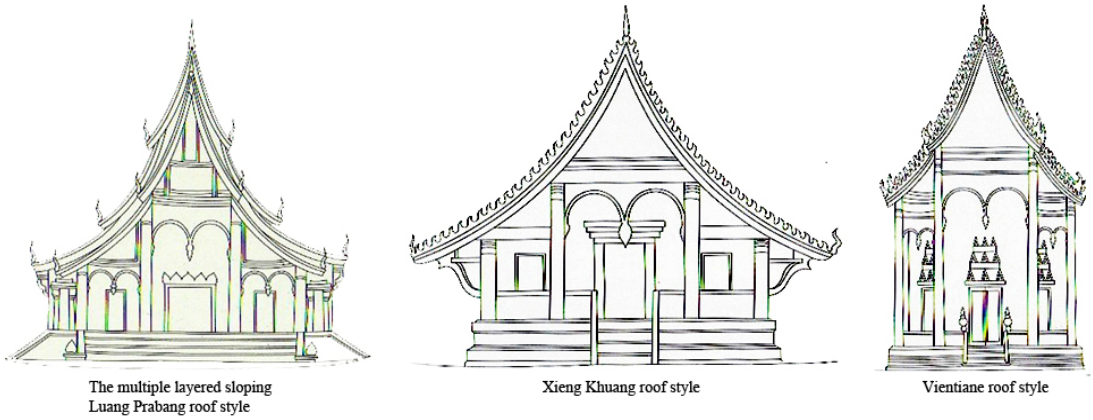
After the division of the three Lao kingdoms, they all were under the Siamese control by the 18th to 19th century and *Siamese* architecture began to influence Lao Buddhist temples. Many

[127] Heywood 2006, 45.
[128] Ibid., http://www.culturalprofiles.net/laos/Directories/Laos_Cultural_Profile/-1044.html

of the influence can be found in the capital of Vientiane today because the Siamese invaded Vientiane numerous times during the 18th century. As a result, the capital was burnt to the ground while the residents were relocated to Siam leaving the only major structure left, *Wat Sisakhet*.[129] According to UNESCO, there are four categories of Lao temples. They include three Luang Prabang styles and the Siamese style *(figure 8.9)*. Along with the different style of temples, there are also roof styles *(figure 8.10)*.

**Figure 8.9**: Lao Buddhist temple styles.
*Source*: Data from Heywood 2006, 39-41.


**Figure 8.10**: Lao Buddhist Roof styles.
*Source*: Data from Heywood 2006, 40-41.




[129] Doling 2006. http://www.culturalprofiles.net/laos/Directories/Laos_Cultural_Profile/-1044.html (accessed October 4, 2009).

Many structural buildings make up the whole complex of a Lao Buddhist temple. Its layout reflects its diverse role and most of them are oriented to the east and west direction. The complex itself is a collection of buildings within an enclosure periphery wall, built flat on the ground as opposite to the stilts of traditional secular architecture.[130] The only exceptions are the libraries and sometimes the living quarters for the monks. The complex is comprised of the following:

- *Phra rabieng* – an outer periphery wall or clioster that borders and divides the religious ground from other areas such as residential or agricultural space
- *Kuti* – the monk's living quarters
- *Hortai* – a sacred library that keeps religious writings and representations
- *That* – stupas for relics and ashes of the dead
- *Sim* – a congregational hall, the holiest building located in the heart of the complex. It is a space for meditation and ceremonial meetings. The entrance and the large Buddha statue in the sim is always oriented towards the east in the direction of the rising sun
- Other buildings such as the drum tower, chapels, spirit house, and meditation quarters

*Traditional Lao Dwellings*

From the beginning of the *Lan Xang* Kingdom to the 19th century, besides palaces and Buddhist temples, structures in Laos were mainly wooden stilted houses, which grouped around ruins of temples and palaces. These wooden stilted dwellings were made of tropical hardwood or bamboo with a thatched roof. The roof is a high-pitched gable with extended eaves and 45 degree slopes to protect the monsoon rain runoffs.[131] It also has a verandah projecting outward to maximize sun protection and provide air movement through the interior space. In a hot and humid climate like Laos, the concept of ventilation is very important. A traditional Lao dwelling often has open floors with no ceilings and the walls are disconnected to the roof to make best use of natural ventilation through the building. Furthermore, the whole structure is elevated or built on stilts to maximize natural ventilation *(figure 8.11)*. It also provides protection from harmful

[130] Heywood 2006, 55.
[131] Sichanthala 1996-97, 29.

animals, insect infestations and avoids flooding during the rainy season. The open space below then became a living space for family activities, cooking, storage, and livestock.

*French Colonial Architecture (1893-1953)*

Laos became part of the French Indochina Empire in the 19th century along with its neighboring Cambodia and Vietnam. By 1907, the French signed a Franco-Siamese Treaty with Siam drawing a borderline between Laos and Thailand.[132] At the time, it was also a period of French administrative buildings and villas. The Laotian people saw France as a model of modernity. For instance, the king and his officials went to France for education and came back with a completely different perspective. Many of the Lao students who got the chance to travel to France also found it a life-transforming experience.[133] The French made an impact in many major towns and cities throughout Laos. They introduced sewage systems and electrical grids to the cities. They also built numerous French buildings from schools to offices and villas. The French also educated the Lao population with French administration systems, political systems, cuisine and lifestyle.

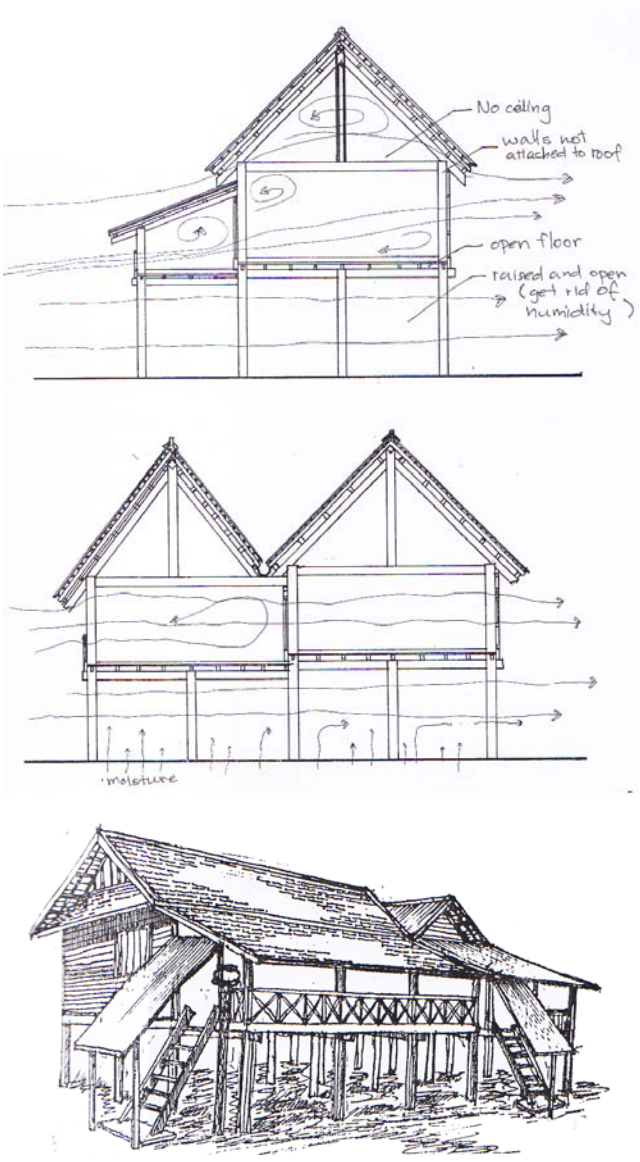



**Figure 8.11**: Concept of natural ventilation in a traditional Lao dwelling.
*Source*: Sichanthala 1996-97, 28.

[132] Evans 2002, 42.
[133] Evans 2002, 62-64.

**Figure 8.12:** *Résidence supérieure* building in Vientiane.
*Source*: http://www.culturalprofiles.net/laos/Directories/Laos_Cultural_Profile/-1046.html

**Figure 8.13:** Royal Palace in Luang Prabang.
*Source*: http://www.culturalprofiles.net/laos/Directories/Laos_Cultural_Profile/-1046.html

Additionally, French architecture also played an important role in influencing the local Lao architecture and vice versa. The design of colonial villas has made an impact in the design of Lao urban dwellings. As a result, more and more of the traditional Lao gabled wooden house on stilts gradually gave way to inventive architectural hybrids by the 1930s.[134] However, it is also true that the traditional Lao dwellings have made an impact on the French villas. The combinations of French and Lao dwellings resulted in European style villas on stilts and traditional Lao stilted dwellings on enclosed masonry walls on the lower level. The French imported Vietnamese workers to carry out building construction in Laos. Chinese and Vietnamese influenced shop-houses also began to develop in Lao urban cities.

[134] Doling 2006, http://www.culturalprofiles.net/laos/Directories/Laos_Cultural_Profile/-1046.html

**Figure 8.14:** French colonial villa in Luang Prabang.
*Source*: Heywood 2006, 184.

**Figure 8.15:** A combination of a shophouse with Lao and French influence in Luang Prabang.
*Source*: http://media-cdn.tripadvisor.com/media/photo-s/01/25/ab/bc/front-of-luang-prabang.jpg

**Figure 8.16:** A traditional Lao house with French influence.
*Source*: http://www.ljb-smooth-hotel-aham.com/hotelsite/507/gallery/gallery_1245986063.jpg

*Modern and Contemporary Lao Architecture (1953-present)*

When Laos became independent from France in 1949, Laos began to look forward to building a modern nation. From the 1950s onward, Laos began to see the appearance of new and innovative architectural styles in administrative and public buildings such as the national assembly, maternity hospital, and schools *(figure 8.17)*.[135] These structures were not only the conception of modernity, but also became the notion of a new beginning.

One of the most significant structures in Laos is the national monument called *Patuxai (figure 8.18)*. The name literally means "the gate of triumph" which refers to Lao independence. Arc de Triomphe in Paris inspired the design with incorporations of Lao motifs and interior decorative elements. The structure is located in the heart of Vientiane facing the Presidential Palace, which also was inspired by French architecture such as the design of the façade with beaux arts style *(figure 8.19)*. Before it became the presidential palace, it was originally built for the French colonial governors and a royal residence.

[135] Ibid.

**Figure 8.17**: National Assembly Building in Vientiane.
*Source*: http://blog.nationmultimedia.com/home/blog_data/82/82/images/laos3.jpg

**Figure 8.18**: *Patuxai* locates in the heart of Vientiane.
*Source*: http://media-2.web.britannica.com/eb-media/02/83802-004-122479DF.jpg

**Figure 8.19**: Presidential Palace in Vientiane.
*Source*: http://www.kriswilliamson.com/resources/_wsb_496x404_Vientiane+Presidential+Palace+b.jpg

Following the fall of the Royal Lao Government to the Lao communist party in 1975, Laos began to experience economic difficulties. Not until the 1990s, Laos established the new economic mechanism that boosted the economy.[136] As a result, construction of many new buildings were established throughout Laos, which included the new National Assembly, Supreme Court Building, Lao Plaza Hotel, the National Cultural Hall, *Patuxai* Monumental Park, Don Chan Palace, and International Airport of Luang Prabang. These massive structures are a combination style of robust communist and Lao architecture. The roof in many of these buildings obviously represents Lao culture, but yet the structure is not very traditional and rather a mixture with European influence.

**Figure 8.20**: International Airport in Luang Prabang.
*Source*: http://www.welovelaos.com/content/images/louang_prabang_international%20airport.jpg

**Figure 8.21**: National Cultural Hall in Vientiane.
*Source*: http://farm4.static.flickr.com/3532/3814854581_7caa12b77b.jpg

**Figure 8.22**: Five-star hotel of Don Chan Palace in Vientiane.
*Source*: http://www.visit-mekong.com/don-chan-palace/images/hotel00.jpg

[136] Ibid.

Ever since the new economic mechanism, many individuals have had the right to build their own homes and make money from their property. With an unsystematic system in design and construction, the popularity of the ubiquitous Greco-Roman style house became a common style throughout the urban cities, especially in Vientiane. They originated from Thailand and its influence spread across the border to Laos. Traditional Lao dwellings are declining in major urban cities along with the French colonial villas. Today, traditional Lao dwellings only can be found in rural areas.

**Figure 8.23**: Example of a Greco-Roman style house.
*Source*: http://www.property-bangkok.com/property_images/HS761.jpg

## Bibliography


Andaya, Barbara Watson. "Political Development between the Sixteenth and Eighteenth Centuries", in Tarling, Nicholas, Ed. The Cambridge History of Southeast Asia. United Kingdom: Cambridge, 1992.

Aubertin, Catherine. "Institutionalizing Duality: Lowlands and uplands in the Lao PDR." *International Institute for Asian Studies.* Asian Frontiers. No. 24 (2001): 11.

Askew, Marc, Colin Long, William Logan. *Vientiane: Transformations of a Lao Landscape.* Singapore: Routledge, 2007.

Bard, Dan, Barry Burch, Carl Robinette, Elmer Weibley, Chad Wentz, Lenore Vasilas. *Factors of Soil Formation.* The Maryland Environthon Soils Workgroup. Maryland, September 2002. http://faculty.msmary.edu/envirothon/current/guide/factors_of_soil_formation.htm (accessed November 9, 2009).

Beek, Steve Van. *The Chao Phya River in Transition.* Singapore: Oxford, 1995.

Braunfels, Wolfgang. *Urban Design in Western Europe: Regime and Architecture, 900-1900.* Chicago: The University of Chicago, 1988.

Bridge, John S. *Rivers and Floodplains: Forms, Processes, and Sedimentary Record.* United Kingdom: Blackwell Science, 2003.

Brinkhoff, Thomas. City Population. 2009. www.citypopulation.de (accessed August 20, 2009).

Central Intelligence Agency (CIA). The World Fact Book: Laos. 2007-2011. https://www.cia.gov/library/publications/the-world-factbook/geos/la.html (accessed October 1, 2009)

Clément, Sophie, Pierre Clément. *ເຮືອນລາວ (Lao House).* Vientiane: Toyota Foundation, 2003.

Commission of Architecture and the Built Environment. *By Design, Urban design in the planning system: towards better practice.* London, United Kingdom: Commission of Architecture and the Built Environment, 2000.

Coughanowr, Christine. *Wetlands of the Humid Tropics*. Australia: UNESCO, Mekong River Commission, 1998.

Doling, Tim, Bounleuane Boupha, Somkieth Kingsada, Petchinda Sinpaseuth. Visiting Arts. *Cultural Profiles Project: Laos.* August, 2006. http://www.culturalprofiles.net/laos/Directories/Laos_Cultural_Profile/-951.html (accessed September 10, 2009).

Evans, Grant. *A Short History of Laos: The Land in Between.* Allen & Unwin: Australia, 2002.

Finlayson, CM, G W Begg, J Howes, J Davies, K Tagi, J Lowry. *A Manual for an Inventory of Asian Wetlands.* Version 1.0. Wetlands International Global Series 10. June, 2002.

Heywood, Denise. *Ancient Luang Prabang.* Bangkok: River Books, 2006.

Joomalee, Southisa. ນາງ ສຸດທິສາ ຈູມມະລີ. *ບົດວິທະຍານິພົນ ໂຄງການ: ສຶກສາແນວທາງເພື່ອການວາງແຜນຄຸ້ມທີ ຢູ່ອາໃສ [ກໍລະນີສຶກສາ ບ້ານໄຊສົມບູນ, ເມືອງໄຊທານີ, ນາຄອນຫຼວງວຽງຈັນ] (BA. Thesis: the study of methodologies and planning of living area in the case study of Baan Xisomboun in Muang Xaithani in the capitol of Vientiane).* University of Vientiane, Laos: School of Architecture, 2007-2008.

Jumsai, Sumet. *Naga: Cultural Origins in Siam and the West Pacific.* Singapore: Oxford University Press, 1988.

Kakonen, Mira. "Mekong Delta at the Crossroads: More Control or Adaptation?" *AMBIO: A Journal of the Human Environment.* Vol.37, No.3 (2008): 205-212.

Lechner, Norbert. *Heating, Cooling, Lighting: Sustainable Design Methods for Architects.* 3rd Edition. New Jersey: John Wiley & Sons, Inc. 2009.

Li, Shaojuan, Daming He. "Water Level Response to Hydropower Development in the Upper Mekong River." *AMBIO: A Journal of the Human Environment.* Vol.37, No.3 (2008): 170-177.

*Luang Prabang: an architecture journey.* Vientiane, Laos: Ateliers de la Peninsula, 2004.

Mathur, Anuradha, Dilip da Cunha. *Mississippi Floods: designing a shifting landscape.* Pennsylvania: Yale University Press, 2001.

Mollot, Roger, Chanthone Phothitay, Sonsai Kosy. "Hydrology, Habitat and Livelihoods on the Floodplains of Southern Lao PDR." *MRC Fisheries Programme (FP), Mekong River Commission* (2005): 155-176.

New Five Elements, Sdn. Bhd. 2009. http://www.sunlaoscity.com/ (accessed September 8, 2009).

Penny, Dan. "The Mekong at Climate Crossroads: Lessons from the Geological Past." *AMBIO: A Journal of the Human Environment.* Vol.37, No.3 (2008): 164-169.

Rigg, Jonathan, ed. *The Gift of Water: Water Management, Cosmology and the State in Southeast Asia.* London: School of Oriental and African Studies, University of London, 1992.

Saksri, Nangnoi. *Physical Elements of Ratanakosin.* Bangkok: Chulalongkorn University, 1991.

Salvadori, Antonio. *Venice: Guide to the Principal Buildings History of Architecture and Urban Form.* Venezia: Canal and Stamperia, 1995.

Savada, Andrea Matles, ed. *Laos: A Country Study*. Washington: GPO for the Library of Congress, 1994. http://countrystudies.us/laos/ (Accessed August 20, 2009).

Sichanthala, Bhounyong. ທ້າວ ບຸນຍົ້ງ ສີຈັນທະລາ. *ບົດວິທະຍານິພົນ ໂຄງການ: ວິເຄາະເຮືອນລາວລຽບຕາມລຳ ເມ່ນ້ຳຂອງເລີ້ມແຕ່ສີໄຄຮອດບ້ານຫ້ອມ ກ່າເຜງນະຄອນວຽງຈັນ (BA. Thesis: Research on Laotian House along the Mekong River from Sikhai District to Bhanhom in Vientiane).* University of Vientiane, Laos: School of Architecture, 1996-1997.

Simms, Peter, and Sanda Simms. The Kingdoms of Laos: Six Hundred Years of History. United Kingdom: Richmond Surrey, 1999.

Smithies, Michael. "The Monuments of Vientiane and Luang Prabang." *Journal of the Hong Kong Branch of the Royal Asiatic Society* Vol. 14 (1974): 101-107.

Stuart-Fox, Martin. A History of Laos. United Kingdom: Cambridge, 1997.

Stuart-Fox, Martin. "On The Writing of Lao History: Continuities and Discontinuities". Ngaosrivathana, Mayoury, and Kennon Breazeale. Breaking New Ground in Lao History: Essays on The Seventh to Twentieth Centuries. Ed. Thailand: Chiang Mai, 2002.

The BBC Weather. 2006. http://www.bbc.co.uk/weather/world/city_guides/results.shtml?tt=TT002550 (accessed November 23, 2009).

Walling, Des E. "The Changing Sediment Load of the Mekong River." *AMBIO: A Journal of the Human Environment.* Vol.37, No.3 (2008): 150-157.

Yeang, Ken. *Tropical Urban Regionalism: building in Southeast Asian City.* Singapore: Concept Media, 1987.